ONTRACTORS and ENGINEERS

GAZINE OF MODERN CONSTRUCTION JANUARY 1960

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Bituminous Paving (cover story) page 34

Placing first layer of coarse-graded Texaco Asphaltic Concrete foundation on the soil-aggregate subbase.

This Virginia highway needed a heavy-duty pavement

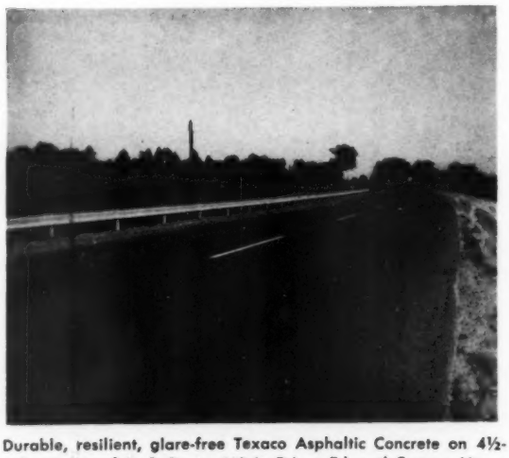
A 4½-mile section of U. S. Route 460 in Prince Edward County is an example of heavy-duty Texaco Asphalt paving as Virginia constructs it. Both the foundation and the wearing surface are of rugged plant-mix Asphalt construction. Coarse-graded Texaco Asphaltic Concrete was used for the 5½-inch foundation and fine-graded Texaco Asphaltic Concrete for the 1½-inch wearing surface. Under this asphalt pavement is a 5-inch soil-aggregate subbase.

Its performance on Virginia's primary highways recommends this heavy-duty type of Texaco asphalt construction for the Interstate Highway System. Not only does it absorb punishing impact year after year, with a minimum of upkeep, but its first cost is substantially lower than that of rigid paving of comparable design. Let Asphalt help give your State extra miles of modern roads for its highway dollars.

Helpful information on heavy-duty Asphalt paving, as well as the various intermediate and low-cost types of Asphalt construction, is supplied in two free Texaco brochures. Ask our nearest office to send you copies. There is no obligation.

Contractor: ADAMS CONSTRUCTION COMPANY, Roanoke, Va.

Constructing fine-aggregate Texaco Asphaltic Concrete wearing surface.



Durable, resilient, glare-free Texaco Asphaltic Concrete on 4½-mile section of U. S. Route 460 in Prince Edward County, Va.

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TEXACO ASPHALT

CONTRACTORS and ENGINEERS

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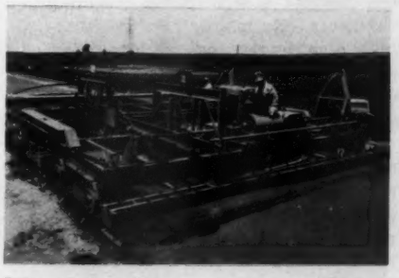
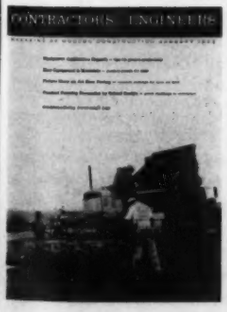


Fast concrete paving. Page 96



COVER:
An International truck with St. Paul body dumps plant mix to a Cedarapids finisher on a bituminous resurfacing job in Wisconsin. The broom at the rear, required by state specifications, tends to bring fines to the surface and provide a tightly knit mat. Rein, Schultz & Dahl, Inc., Madison, Wis., was the general contractor on the project. Page 34.

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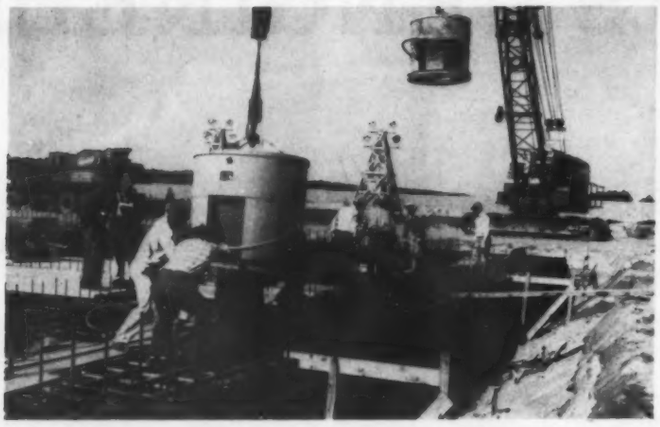
Editorial



Build safely in '60

As another year and another decade begins—incidentally, C&E is now in its 40th year—the construction industry may look forward to a busy 1960. According to our Research Department, which presents a detailed forecast on the facing page under Business Comment, the volume of new construction in '60 could hit a peak of $55.3 billion. We are hopefully assuming, of course, that the steel strike will not be resumed when the present injunction expires on January 26.

At this time, it might be well for the construction industry to make a New Year's resolution or two. The most important resolve to take would be a firm determination to build safely. Such an intention should be adopted not only by the contractor and the supervisory inspecting engineers, but back through the chain of related suppliers of equipment and materials for any project, to the drawing boards of the designing engineers. No matter how painstakingly a contractor may work to follow plans and specifications, there will be danger if the original design of a structure is risky or too daring.

Pending a release of an engineering report on the failure of the 700-foot-long by 200-foot-high Malpasset Dam on the Reyran River at Frejus, France, no one can assess the cause of the catastrophe that resulted in the death or disappearance of some 300 persons. This relatively thin concrete structure, only 5 feet wide at the crest and 23 feet wide at the base, had been subjected to a week of unprecedented heavy rainstorms. The coastal area of southern France, where the dam was located, had also been buffeted by tidal waves off the Mediterranean. Postmortem reports on construction failures usually take months or even years for completion; then the findings are generally so obscure that it is almost impossible to levy the blame for failure either on the design or construction of the project, or on unpredictable forces of nature.

The construction industry has a tremendous responsibility to humanity to see that what it builds is built properly, without skimping on materials or without cutting corners to save time and money at the expense of safety or durability. Of course the contracting agencies must also be on the alert to see that the job is built to approved standards. Only last month the New York State Thruway Authority had to reject a 7.4-mile section of the Berkshire connection that had just been completed at a cost of over $7 million. The contractor, according to the Authority, failed to meet specifications in some paving and drainage works.

That brings up a second suggested resolution for the New Year—this one for contractors: Bid intelligently. According to the Business Economics Department of Dun & Bradstreet, Inc., around 2,000 contractors were expected to fail in 1959 and to cease operations following bankruptcy or some other form of business attachment or foreclosure.

The money involved in these losses will probably total over $100 million. The principal underlying cause for these failures was attributed to inexperience and incompetence. Successful contractors do not bid blindly, nor do they bid without expecting to make a profit. When they get a job, after underbidding their competitors, it is generally because of greater experience, know-how, efficiency—call it what you will—by which the successful bidder expects to complete the project at a cost below his estimate. Furthermore, the successful contractor keeps a close checkrein on his costs, week to week, even day to day. If these costs get out of line, he goes after the cause at once, not waiting until it is too late to effect a remedy.

At times, some contractors will be awarded jobs they did not figure to get and with a lucky break will complete them at a profit. But in the long run, the companies that depend on management skill and ingenuity rather than on luck breaks are the contractors that stay in business and show a profit at the end of the year.

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Donald V. Buttenheim

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Field Editors
Ralph Monson
Anthony N. Mavroudis
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The year ahead

In 1960 the construction industry will sustain the peak level of activity it reached in 1959. Spending for new construction may reach $55.3 billion this year—2 per cent more than the $54 billion level of 1959. While the expected $1.3 billion gain represents anticipated price rises rather than an increase in actual work put in place, the outlook is generally a very favorable one for the industry as a whole.

The basis for this optimism is a predicted surge in nonresidential building and a better outlook for highway construction spending than might have been expected in view of the recent restrictive legislation.

Highway work, which now takes more than one out of every three dollars spent for public construction, will account for $5.7 billion of public funds for 1960. This is just slightly below the 1959 outlay—an all-time high at $5.8 billion. Expenditures for 1959, it should be remembered, included $400 million of "anti-recession" money appropriated in the Federal-Aid Highway Act of 1958.

All public construction is estimated at $16.5 billion in 1960, compared with $16.2 billion in 1959. The big gains will be in sewer and water-systems work and in public-service enterprises. The 1,325,000 housing starts of 1959 will mean an 11 per cent gain in sewerage and water-works construction in 1960—from $1.465 billion to $1.625 billion. New projects of the U. S. Army Corps of Engineers will boost conservation and development work 7 per cent over last year—from $1.150 billion to $1.225 billion.

Expenditures for schools will be about $2.750 billion, as against $2.675 billion in 1959.

A 19 per cent gain in nonresidential building—from $8.6 billion to $10.2 billion—will put private construction expenditures 3 per cent above last year's total, despite the expected drop of $650 million in residential work. The need for new, more efficient production facilities will raise spending for industrial buildings by 26 per cent from $1.950 billion to $2.450 billion. Commercial construction—office buildings, warehouses, and other smaller structures—will be up 16 per cent in 1960, from $3.85 billion to $4.45 billion.

Electric light and power utilities, having just completed a major program of expansion, will spend slightly less than the $2.075 billion they did in 1959. With legal uncertainties out of the way, the gas industry is expected to spend $1.825 billion in 1960, which represents a total of 7 per cent more than was spent in 1959.

The generally optimistic forecast assumes that the national economy, as a whole, will move forward, with gains approaching those of 1959. While construction is not expected to contribute to the expansion, it is being counted on to stabilize the economy at its present boom level.

3-YEAR TREND IN NEW CONSTRUCTION SPENDING

Type of construction	Value (in millions) 1958	1959	1960 Estimated	Percent change 1958-59	1959-60
TOTAL NEW CONSTRUCTION	$48,903	$54,000	$55,300	+10	+ 2
PRIVATE CONSTRUCTION	33,491	37,800	38,800	+13	+ 3
Residential buildings (nonfarm)	18,047	22,150	21,500	+23	− 3
Nonresidential buildings (nonfarm)	8,675	8,600	10,200	− 1	+19
Industrial	2,382	1,950	2,450	−18	+26
Commercial	3,589	3,850	4,450	+ 7	+16
Other nonresidential buildings	2,704	2,800	3,300	+ 4	+18
Farm construction	1,475	1,750	1,550	+19	−11
Public utilities	5,105	5,100	5,350	−	+ 5
All other private	189	200	200	+ 6	0
PUBLIC CONSTRUCTION	15,412	16,200	16,500	+ 5	+ 2
Residential buildings	846	1,000	900	+18	−10
Nonresidential buildings	4,653	4,500	4,725	− 3	+ 5
Military facilities	1,402	1,490	1,375	+ 6	− 3
Highways	5,500	5,800	5,700	+ 5	− 2
Sewer and water systems	1,387	1,465	1,625	+ 6	+11
Public service enterprises	451	560	700	+24	+25
Conservation and development	1,019	1,150	1,225	+13	+ 7
All other public	154	235	250	+53	+ 6

Source: Bureau of the Census and Business and Defense Services Adm.

PUTTING IN A BID?

Goodyear can tell you ways to cut your costs

WHAT YOU'RE UP AGAINST—Problems of terrain, roads, loads, climate, schedules and speeds will be calculated by Goodyear Big-Tire Specialists to determine what your tire needs and costs will be.

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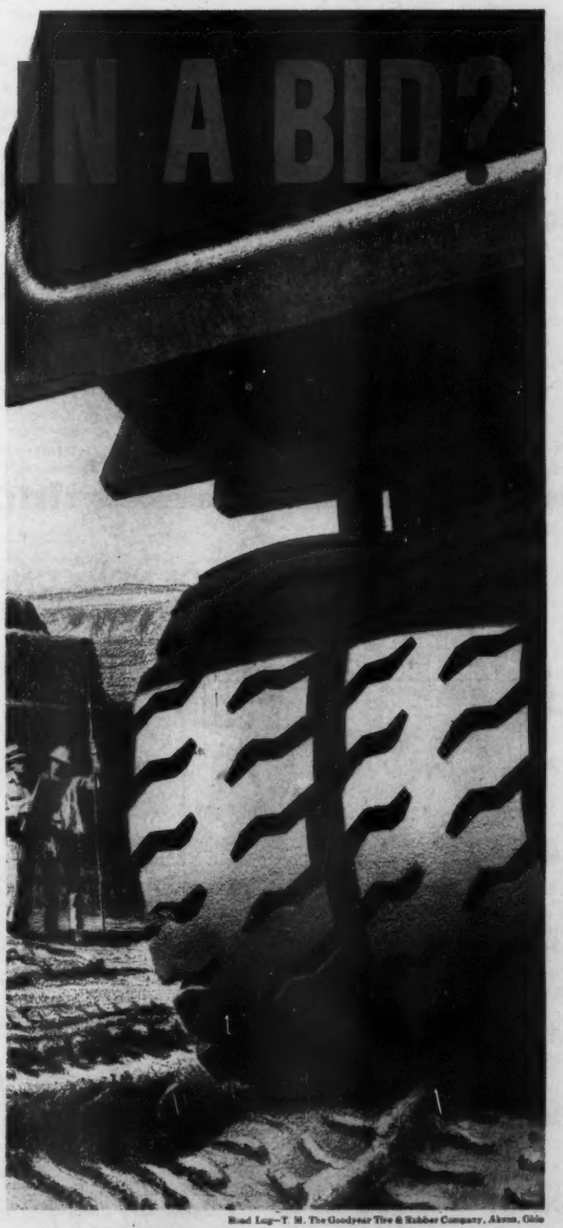
Plus—BIG-TIRE PERFORMANCE
Example: SUPER ROAD LUG

Here's the great "go-anywhere" tire that's designed to keep going strong under the most brutal conditions—still be in good shape long after ordinary tires have quit. With its 50% greater nonskid tread and super-tough, new cut-resisting rubber compounds, SUPER ROAD LUG is built to perform better and far longer than other heavy-duty tires—yet costs no more to start with. Get the whole story from your Goodyear dealer—or write Goodyear, Truck Tire Dept., Akron 16, Ohio.



Road Lug—T. M. The Goodyear Tire & Rubber Company, Akron, Ohio

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MORE TONS ARE HAULED ON GOODYEAR TRUCK TIRES THAN ON ANY OTHER KIND

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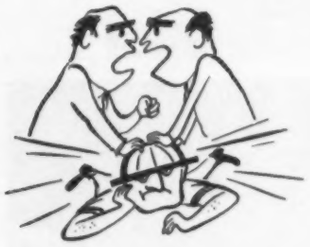
Surveying Washington..

by E. E. Halmos, Jr.

Construction to figure in new Congressional battles

Construction will find itself in the middle of many major battles when Congress gets down to business this month. Before considering what Congress may do or say, keep in mind that



this is a political year with the presidency and the control of Congress at stake.

Here's how the legislative lineup looks:

1. Housing. Last session the President vetoed a general housing and urban renewal measure on the grounds that provisions in the bill were too costly. But these programs have a lot of voter appeal, and you can count on a new housing bill going to the White House. It should conform pretty well to the President's wishes—and soft-pedal federal construction features.

2. Stream pollution, the so-called "Blatnik Bill." This would raise present grants to communities for stream pollution and sewage-disposal work from the current $50 million annually to $100 million. The bill went through both houses, got hung up in conference committee as the session ended. Prospects for passage: good.

3. California's huge San Luis project—a part of the Feather River development that would cost a total of $1.2 billion, with a large part of the money coming from the state. The bill (S.44) got through the Senate after removal of a clause that would have lifted the long-standing 160-acre restriction on lands served by federal projects. But a House committee promptly reinstated the clause in reporting the measure to the floor. A hot fight is in prospect; chances of passage are considered a tossup.

4. The Kennedy wage-hour bill (S. 1046), which would raise the minimum wage rate from $1 per hour to $1.25. This is almost unanimously opposed by business interests; supported by labor. Chances of passage: fair.

5. Appropriations bills. This is where the real fight will center this session, as the Administration attempts to end its term with a balanced budget and Congress tries to get some vote-getting projects started.

6. There will almost certainly be some legislation at "modernizing" the Davis-Bacon and Walsh-Healy acts, which concern rates of pay on government projects. Business groups, spearheaded by the U. S. Chamber of Commerce, have already started assembling committees to recommend changes on the ground that the acts are more than 30 years old, do not allow enough flexibility to cope with current conditions, and are being used by labor to force up wage rates. Chances of action: only fair.

7. New legislation seeking a change in the basis of determining feasibility of Bureau of Reclamation projects to include benefits of recreation, stream-pollution control, fish and wildlife preservation, etc. Chances of passage: good.

8. The biennial appropriations for the ABC (primary, urban, and rural) highways. The only question whether Congress will continue raise the appropriations ante by million per year—the present figu stands at $875 million—as it h done in the past.

"New starts" possible in public-works projects

There have been several stories o of Washington speculating that t Administration might reverse long-standing position on "ne starts" in public-works construction The stories originated in a press con ference in which Interior Secretar Seaton said he "hoped" some ne starts might be looked upon favor ably—over and above those 67 proj ects that Congress approved ove the President's veto at the end of th last session.

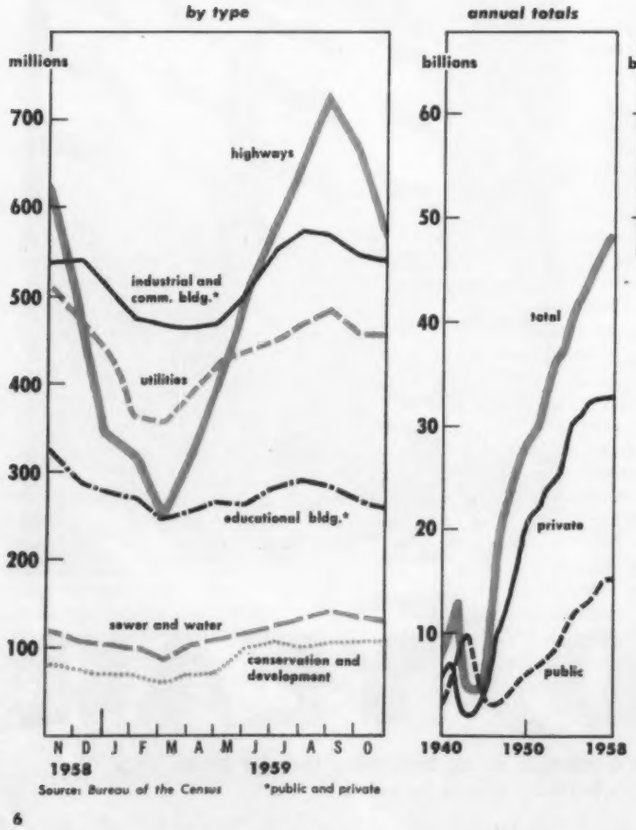
Seaton's comment reflects the po litical realities of this year. Public works measures—both by the Army and the Bureau of Reclamation, a well as other government agencies— are tried-and-true vote getters. An the Administration must consider no only its own final record, but a rec ord on which the President's suc cessor as party standard bearer ca stand and be elected.

With this in mind, it is quite pos sible that some of the U. S. Army Corps of Engineers' $400 million backlog of approved projects in flood-control and river and harbor work might come off the shelf, and some o these are big jobs.

Industry Trends

DOLLAR VALUE OF NEW CONSTRUCTION

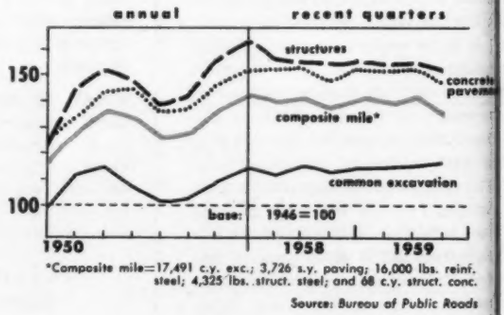
Recent Monthly Trends



Source: *Bureau of the Census* *public and private

AVERAGE BID PRICES

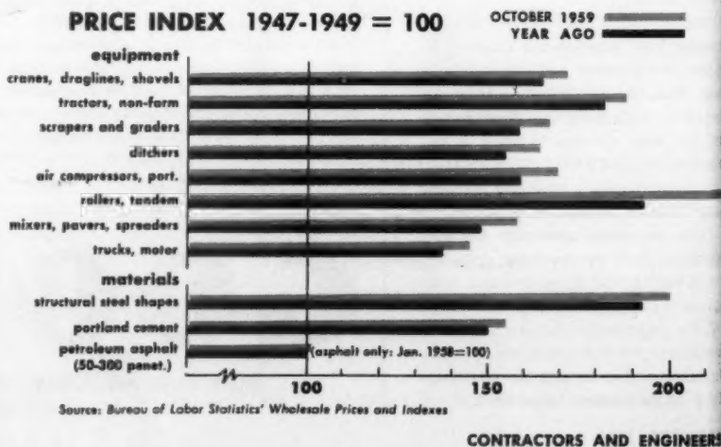
Federal Aid Highway Construction



*Composite mile=17,491 c.y. exc.; 3,726 s.y. paving; 16,000 lbs. reinf. steel; 4,325 lbs. struct. steel; and 68 c.y. struct. conc.

Source: *Bureau of Public Roads*

PRICE INDEX 1947-1949 = 100



Source: *Bureau of Labor Statistics' Wholesale Prices and Indexes*

HEW blasts "degree mills"

The Department of Health, Education and Welfare recently blasted the "degree mills"—mail-order "colleges and universities" that give out phony degrees. HEW has little authority to regulate schools of any kind unless it can prove actual fraud in use of the mails, or in some other regard. This would take an investigative staff well beyond the means of the agency.

HEW Secretary Flemming hopes that professional and business groups will insist on some sort of standards of teaching and proficiency before the award of a degree. He was careful to point out that many "study-by-mail" institutions are perfectly legitimate.

Four developments on labor involve Supreme Court, NLRB

Here are some late developments on labor.

1. The National Labor Relations Board has set up procedures through which you can quickly determine whether your case will be taken by the NLRB or can safely be taken to state courts or agencies, under provisions of the new labor law. Your attorney or state agency may petition the NLRB's executive secretary in Washington for a written opinion, which the NLRB promises promptly.

2. Washington, D. C., area builders won't get anywhere—but they are going to try—in an attempt to get legislation that will force out-of-town contractors to include all local fringe benefits in their estimates on bids. The attempt grows out of the award of a $2.3 million contract to Diamond Construction Co., Savannah, Ga., for substructure of the new 14th Street bridge across the Potomac, despite the protests of local builders that the contractor is importing labor and therefore is not paying all the fringes that local men must meet to keep local labor.

3. Two Supreme Court actions—both refusals to review lower-court decisions—will have profound effect on your dealings with technical employees. In one case, the court, in effect, affirmed a decision that the manner in which a man is paid—not his training, title, or duties—determines whether or not he is a "professional."

The second case involved a statewide contract between California contractors and unions, which provides that subcontractors must do business with the same unions. An engineering firm, hired to do earthwork computations, objected that its employees were technicians, already members of a technician's union, and should not be forced to join the Operating Engineers, which had struck the job. The courts and NLRB held the strike illegal but said that the contract clause itself is legal.

Social security, transportation bills may affect building

It will pay construction men to watch the progress of the Forand Bill, introduced by Rep. Aime Forand (D., R. I.), which would extend social security coverage to include hospital care and nursing-home care. It could mean a lot of construction work.

But it would also mean a major increase in the bite now put on employer and employee for social security tax payments, which have increased this year. Since there is no provision for such extra services in the present measure, added taxes would be a necessity. What makes it worth watching is the fact that Congress has a record of "sweetening" social security in every election year and in every year when the tax rate increases. Both of those things happen this year.

Another area of legislation that's almost certain to produce some bills this session will be in the general field of transportation. There are two special studies of the whole transportation picture under way, one by the U. S. Department of Commerce, the other by the Senate Interstate and Foreign Commerce committee.

It is expected that both reports may tend toward the oft-repeated objective of a single U. S. agency to handle all transportation problems. Since such an agency would take over the Bureau of Public Roads, as well as some rivers and harbors functions of the Corps of Engineers, this would be a matter of great concern to the construction industry.

Special report to owners of Traxcavators, D6 and D4 Tractors

CAT CATERPILLAR

Parts you can trust
Dependable round-the-clock service

Now available...lifetime lubricated rollers...two-way savings...

ELIMINATE MAINTENANCE GIVE LONGER LIFE

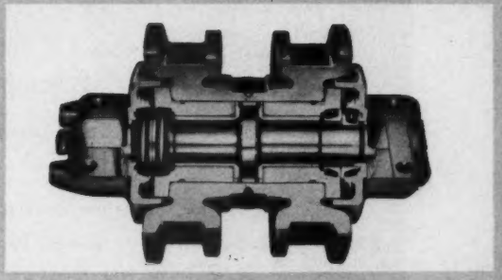
Here's another cost-cutting improvement for Traxcavators and both D6 and D4 Tractors . . . lifetime lubricated rollers. Now you can eliminate on-the-job shutdowns for greasing. And you get longer life from rims, flanges, internal parts. The payoff . . . reduced replacement costs, savings in time.

How maintenance is eliminated—the new Cat-built rollers are lubricated when first installed. They are equipped with floating ring seals that keep lubricant in . . . grit out . . . for the life of the rollers. Only when rollers are disassembled for rebuilding will relubrication be necessary. And the original metal rings can be reused.

New floating ring seal . . . only four parts, no springs. The roller seal employs two alloy metal rings and two rubber "O" rings. The metal rings, much harder than the best file steel, have lapped faces, smoother than glass. These faces taper slightly toward the inner edge forming a sealing area at the outer edge. As wear occurs, the sealing area moves gradually inward, maintaining a perfect seal for thousands of hours.

The "O" rings keep constant pressure on the metal rings. Lubricant can't get out. Grit can't get in. There are no springs or diaphragms to weaken, wear or become damaged. The "O" rings are made of special compound to resist oil, heat, cold.

Why do roller parts last longer? Grit is permanently sealed out. Big lubricant reservoirs (with strategically located oil passages) insure ample supply of lubricant to moving parts. Oil instead of grease is used for roller lubricant. Oil dissipates heat faster, circulates more freely than grease. These features assure you of longer shaft and bearing life. Longer bushings with extra-thick flange assures rigid support. Large sleeve bearings provide ample bearing area. Larger diameter, deep-hardened shafts withstand higher shock loads. Beam strength has been increased 63% for D6 shafts; 185% for D4 shafts. Resistance to side thrust is greatly increased in D4 shafts by a 25% wider center flange and 73% more thrust-bearing area.



Why do rims and flanges last longer? The new two-piece roller shell has greater strength and impact resistance. Special heat-treat process provides extra-hard and deep wear surfaces. Ample steel under tread gives strong support to resist shock loads. Thicker flanges combat peening over. Overlapping center joint maintains rigid shell without separate hub.

Easy installation is achieved by use of snap rings to hold the seals and end collars in place before mounting. End collar bolt holes will line up easily with track roller frame holes during installation.

Millions of hours of proof—the toughest track rollers yet. Cat lifetime lubricated rollers have been subjected to extensive and exhaustive on-the-job tests for over 5 years. Working on all types of job conditions, these time-tested rollers have proved to be unequaled. And machine-owner reports prove that Cat lifetime lubricated rollers can't be beaten for low-cost, minimum maintenance operation.

See your Caterpillar Dealer. He'll give you the full story on this time-saving, money-saving undercarriage component.

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SERVICE TIP: When rebuild time finally comes, be sure to keep the metal rings matched in original pairs, being careful not to nick or mar the lapped surfaces.

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For more facts, circle No. 253→

those who know go BMCO...

1 M. B. Killian and Jack House; partners, Killian-House Co., cut compaction time in half with BMCO SPR-13's on the Interstate Highway 35 expressway in San Antonio, Texas.

2 V. P. Stewart; vice president and general manager, San Xavier Rock and Sand Co.; tried out numerous compactors before choosing BMCO SPR-13's for the Route 84 Freeway in Tucson, Arizona.

3 John E. Tiger; Griffith Company superintendent, Los Angeles; solved a tough compaction problem in fine content soil with a BMCO 25T11 on the LeMoore Naval Station project in Fresno, California.

4 Contractor C. Montgomery made a difficult compaction job easy with a BMCO SPR-9 on Storm Sewer Project 58B in San Antonio, Texas.

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During 1959, more and more contractors, nationwide, turned to BMCO for the most versatile, most dependable and most complete lines of compaction equipment available . . . anywhere. This year, it will pay you to investigate BMCO before you invest In any compaction equipment.

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For more facts, use Request Card at page 18 and circle No. 254

Labor Review

Merger conclave is boycotted by Dayton crafts

AFL–CIO representatives attempting to arrange a merger of former AFL and CIO central labor groups at Dayton, Ohio, were meeting bitter resistance from the city's craft unions, according to union sources.

The anti-merger faction is led by John E. Breidenbach, long-time leader of Ohio building trades groups and president of the new Dayton Council of Labor Unions. The council has been issued a charter by the state of Ohio and now is "in business as a legislative labor body," according to its attorney.

Membership in the new council is open to former AFL affiliates who do not want to participate in the local merger. A council official says the new group was formed "to give the Dayton locals the opportunity to run their affairs independent of coercion from other groups in the city, to retain their identity, and to cooperate together for education and mutual assistance."

A council spokesman said 12 local unions had voted to affiliate and that others were expected to follow suit. Locals were advised by the council that no parent organization could prohibit their joining the new organization. Council officials rely on the new Reporting and Disclosure Law which, they say, "gives local unions the right to run their affairs without interference from the internationals."

Unemployment insurance extends to smallest firms in New York State

Almost all wage earners in New York State will be protected by unemployment insurance, commencing January 1, 1960.

As of that date, employers subject to the new law include any employer, not previously covered, who paid wages of $300 or more during the 3-month period of October, November, and December, 1959; after that date, any employer not already covered on January 1, 1960, who pays wages of $300 or more in any calendar quarter, is subject to the recently passed law.

The Division of Employment will send notice in January, 1960, to all liable firms it knows of. However, any employer who had a $300 payroll in the last quarter of '59 and does not receive such notification by January 15, 1960, is still liable for tax. He must then report his status to the Division of Employment, 300 N. Pearl St., Albany, N. Y.

An employer who had a payroll less than $300 in the last quarter of 1959, but which goes to $300 or over in some later quarter, must write to the Division of Employment as soon as his payroll in any quarter reaches $300. The division will then register the employer. He will also receive an official poster he is required to display prominently.

Hoffa advises teamsters to check on picket lines before refusing to cross

Unions that want the teamsters to respect their picket lines will have to prove that they have a bona fide dispute, that the employer is legally required to recognize the striking union, and that the picketing has been authorized by the membership, if local teamster bodies follow the advice of International Brotherhood of Teamsters president James R. Hoffa.

Hoffa sent IBT joint councils a suggested notice to be sent, in turn, by them to building trades councils and other central labor groups to get the low-down on picket lines so that members of the teamsters can be properly advised on whether to observe the picketing. Hoffa indicated that the information is necessary to keep teamsters out of trouble under the Labor-Management Reporting and Disclosure Act.

Indiana operating engineers continue strike as proposal is rejected

Operating Engineers Local 103 continued its strike against employers in thirty-three Indiana counties as its latest wage proposal was rejected.

Negotiators for the contractor associations were said to have indicated, however, that a counter-offer was under consideration. The union asked for a new wage scale that would increase top rates 15 cents in 1959 and 18 cents in 1960.

The union's proposal to break the impasse over hiring provisions, at least temporarily, received no answer. The suggestion was to postpone agreement on a referral system until the NLRB rules on employer charges that the union-proposed provisions are illegal.

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WORLD'S LEADING LINE OF QUALITY DUMP AND TRAILER BODIES

bigger loads

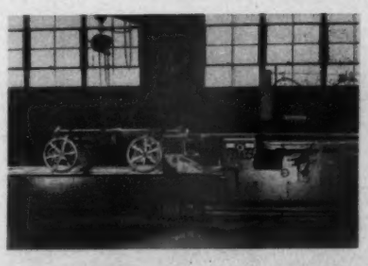
greater stability

faster dumps

New Anthony Teleramic Twin Out-Mount Telescopic Hoists

New Anthony Teleramic Twin Out-Mount Telescopic Hoists – lighter, stronger, faster lift for more payload. Eliminates deadweight of cams, links, arms, etc. Mounted lower, wider for greater stability. No well necessary because of twin out-mount. Simplified design takes less power, less maintenance. Ring-trussed telescopic cylinders eliminate buckle, bulge and bends . . . strongest in their class! Designed for use with Anthony heavy-duty dump bodies—balanced strength and ruggedness. Applies hoist power toward front end of load for maximum mechanical advantage.

Illustrated is the heavy-duty dump body built with extra margin of quality, strength and ruggedness you expect —and get—from Anthony. Have your Anthony distributor recommend the hoist and body you need. If you don't know his name, write us. Anthony Company, Streator, Ill.



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For more facts, use Request Card at page 18 and circle No. 255

The wagon-wheel design of the Maine Township High School West in Des Plaines, Ill., is seen from the air in the early stages of construction. Novel building methods were called into play for the swimming-pool wing, which is not under construction at this point, and for the 210-foot-diameter central-core area, which will house administrative offices, cafeteria, and special training rooms at basement and two upper levels.

Unusual forming demanded by school design

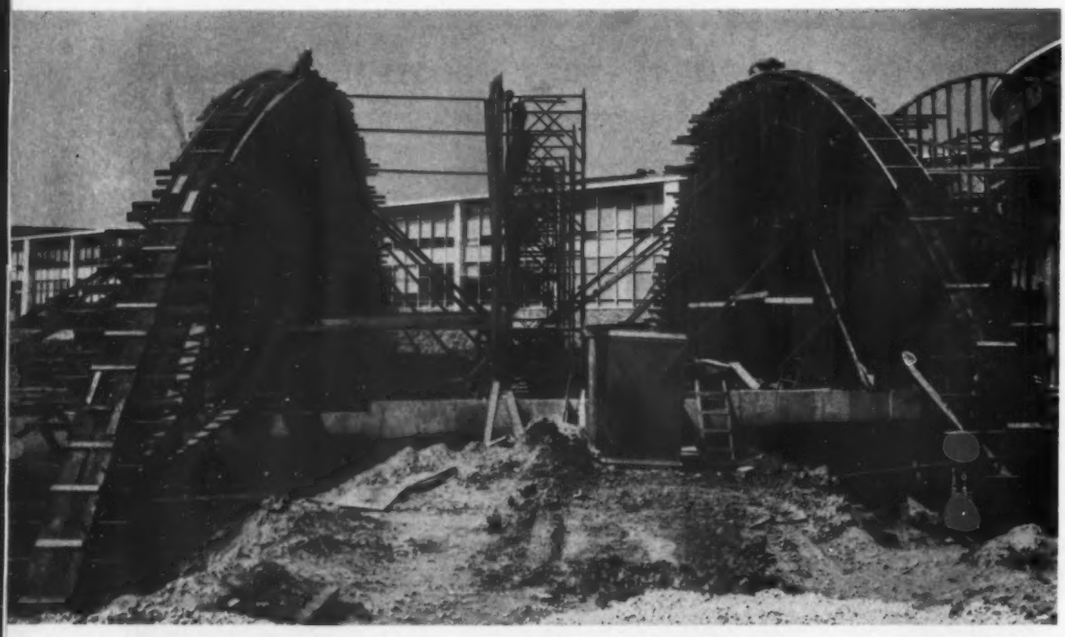
Academic wings extend out from circular core; concrete arches support roof of swimming-pool wing

Construction of the Maine Township High School West in Des Plaines, Ill., was a continuing challenge to the contractor. Its unique design called for unusual building methods.

The most unusual aspect of the work was the forming of the concrete arch roof that covers the two swimming pools. Four poured-in-place arches hold up a 3½-inch concrete deck. The arches extend outside the building, spanning 157 feet at their base. The entire roof structure was formed as a unit, and concrete was placed monolithically.

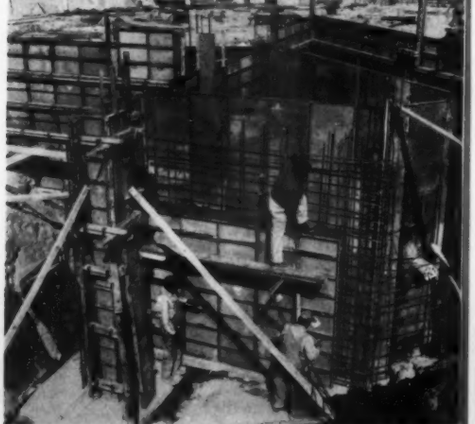
Another tricky job was the forming of the high basement walls of the 210-foot-diameter core building. The Symons form panels used were particularly adaptable for work on circular walls. The steel-backed plywood panels were also convenient for forming the irregular walls of the crawl space under the wings.

The $5.5 million high school has academic facilities for 3,000 students, with special and service facilities for the ultimate enrollment of 4,000. The school is located on a 75-acre site on Wolf Road between Oakton and Howard Streets in Des Plaines, a suburb of Chicago. The unique design of Childs & Smith of Chicago was put into concrete and steel by Fred Berglund & Son, Inc. The Chicago-based company was the general contractor.



Arch and shell construction is used for the roof of the swimming-pool wing. Between two of the four arches, men are building a falsework arch to support adjustable steel bar joists that run between the main arches. The joists will support 2-inch lumber, to which plywood forms will be nailed. At right, the arches, spanning 157 feet at their bases, extend out beyond the 89×162-foot building; footings for them are buried about 8 feet in the ground. Steel is being set for the arch beams, which will be exposed.

Forms for the curving outside wall of the core building, braced on one side only, are made up of Symons form panels. Wales bracing the forms are of four 2×2's so that they can bend around the surface. Concrete is being chuted to the forms by Smith mixers on White trucks.



Complicated forming of an area between wings is handled with the Symons panels of varying width. Because of the irregularity of the walls, panels are set individually.

The new concept in school design places the over-all administrative offices, counselor's offices, cafeteria, music room, auditorium, and other special rooms in a circular core building. Stemming out from the central core, like spokes in a wheel, are three academic wings, a shop-training wing, and a short wing with two swimming pools. Provision has been made for one additional academic wing to tie into the core when future expansion is desirable.

Each 2-story wing is an independent unit, providing classroom facilities and a gymnasium for about 1,000 students. The gymnasiums are located at the outer ends of the wings.

The design permits future expansion without sacrificing the unity of the building—another spoke is merely added to the wheel. The central core offers a convenient location for activities of the entire student body.

Core building has many uses

The core building has its basement level built of concrete walls and columns; the upper three levels are framed with structural steel. Basically, the building is composed of two concentric walls—an exterior wall with a 210-foot diameter and an interior wall with a 150-foot diameter. The doughnut-shaped area between the walls is split up into smaller rooms. The large inside circle provides a clear area that is used for different functions at different levels.

At the basement level, the clear area (exclusive of a central column) is used as an indoor track and field house. On the first floor, the area accommodates a cafeteria, as well as general lobby and reception space. Between the concentric walls on this floor are the administrative offices. Occupying the upper floor is the auditorium, with a seating capacity for 1,185. Rooms for various activities are located in the doughnut-shaped area on the second floor. Access to the academic wings is gained at both the first and second floors.

The 2-story academic wings are framed with concrete columns supporting pan-type floors. The gymnasium at the end of each wing is framed with structural steel. Window walls let plenty of natural light into the classrooms.

New type of construction

The concrete arch and shell construction of the swimming-pool roof was new to the contractor and new to the midwest area. The forming of arches and deck went slowly but according to plan.

Since the four arches that support the concrete deck span 157 feet at their bases, they extend out from the sides of the 89×162-foot building. The footings supporting the ends of the arches are buried about 8 feet in the ground. To resist the outward thrust, a 4×4 steel bar encased in concrete ties the ends of an arch together.

Spaced 39 feet apart, the arches rise 40½ feet from footing level to

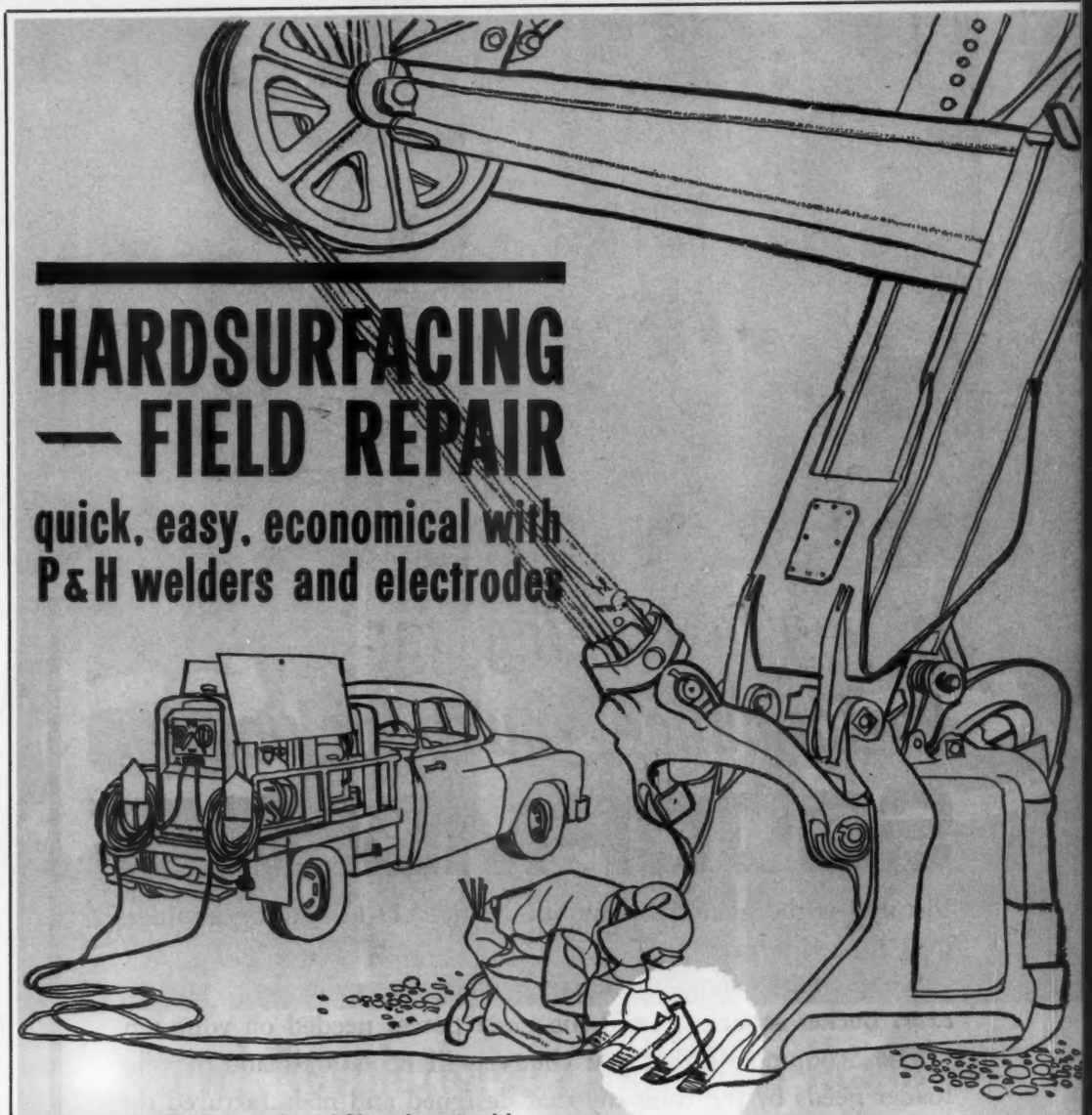
(*Continued on page 13*)

For more facts, circle No. 256→

Ready-mix concrete is chuted from a Smith 7½-yard mixer on a White truck to forms for a wall of the shop-training wing. Electric vibrators consolidating the concrete are driven by the Homelite generator.

HARDSURFACING — FIELD REPAIR

quick, easy, economical with P&H welders and electrodes



High-speed hardsurfacing and fast field repair are two jobs you can handle easily and cheaply with P&H engine-driven welders and P&H hardsurfacing electrodes.

The sturdy wheel- or skid-mounted welders can go anywhere in the field — take plenty of hard knocks — and still do a bang-up job with big, high-deposit rods. P&H machines are powered by field-proved gas or diesel engines famed for their economy. They not only have a miser's grip on the fuel line, but they are more rugged and easier to service.

P&H hardsurfacing electrodes can be used to prevent wear and to prolong the service life on valuable equipment. What's more, hardsurfaced parts will in most cases outlast the original parts by two to twenty-five times!

Investigate both. Write for Bulletin W-158 which describes the welders — and Bulletin R-27 for information on the hardsurfacing electrodes.

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Pictured is the giant Scoopmobile Model LD-12 hauling boulders over rugged terrain.

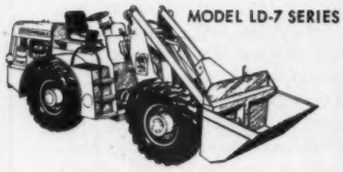
Scoopmobile's complete line of loaders means you can choose the *exact* bucket capacity... and the *exact* power needed on your job.

The Scoopmobile that you choose will be tailor-made to your loader needs by the company that designed and manufactured the FIRST self-contained loader, the FIRST 3-wheeled loader... and was FIRST with 4-wheel planetary drive, center-pin steering and two-axle oscillation.

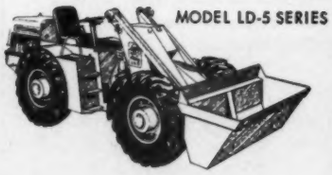
See your Scoopmobile dealer. Let him demonstrate what Scoopmobile... with the Scoopmobile exclusive features... can do for you.

MODEL LD-8 SERIES

MODEL LD-7 SERIES



MODEL LD-5 SERIES



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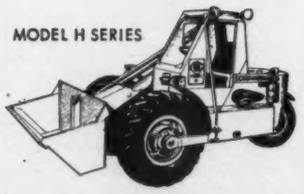

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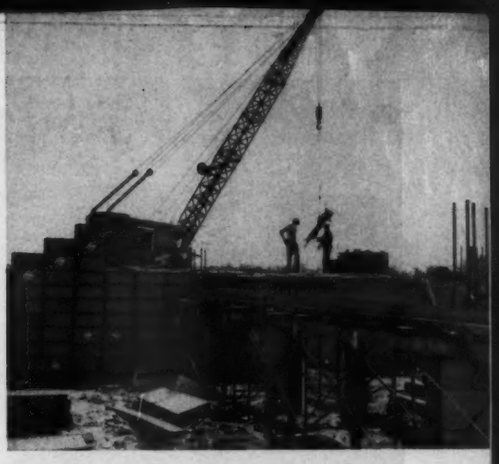
For more facts, use Request Card at page 18 and circle No. 257

Backfilling is done by an Allis-Chalmers HD-9 front-end loader around the crawl space of one of the academic wings. The Deslauriers Econ-O-mold paper forms were used for columns at the lower level; steel forms were used for upper-floor columns.



Steel furnished by U. S. Steel Corp. is unloaded in an academic-wing area by a Bucyrus-Erie 22-B crane. The crawl-space walls in these wings were also formed with the Symons panels.

(Continued from page 11)

the inside crown of the arch. The 2-foot-wide arches vary from 2 feet 9 inches deep at their tops to about 5½ feet deep at their bases. They are built of heavily reinforced standard-weight concrete. The 3½-inch lightweight concrete deck ties in to the underside of the arch, leaving most of the arch exposed. The deck covers the 89-foot width of the building, leaving the ends of the arches extending out from the sides like buttresses.

Arches go up first

The arches were formed first, supported by 4×4 H-shores over the building and 4×4 T-shores at the ends of the arch outside the building. The shores on the outer ends of the arch were slanted on approximately radial lines. The shores supporting the central portion of the arch were vertical, rising to a maximum height of about 37 feet. The shores were closely spaced on 16-inch centers. The arch form was held vertical by four 4×4 diagonal braces on each side. Two-inch lumber topped with Masonite formed the bottom of the arch. Plywood formed the sides.

Deck forming

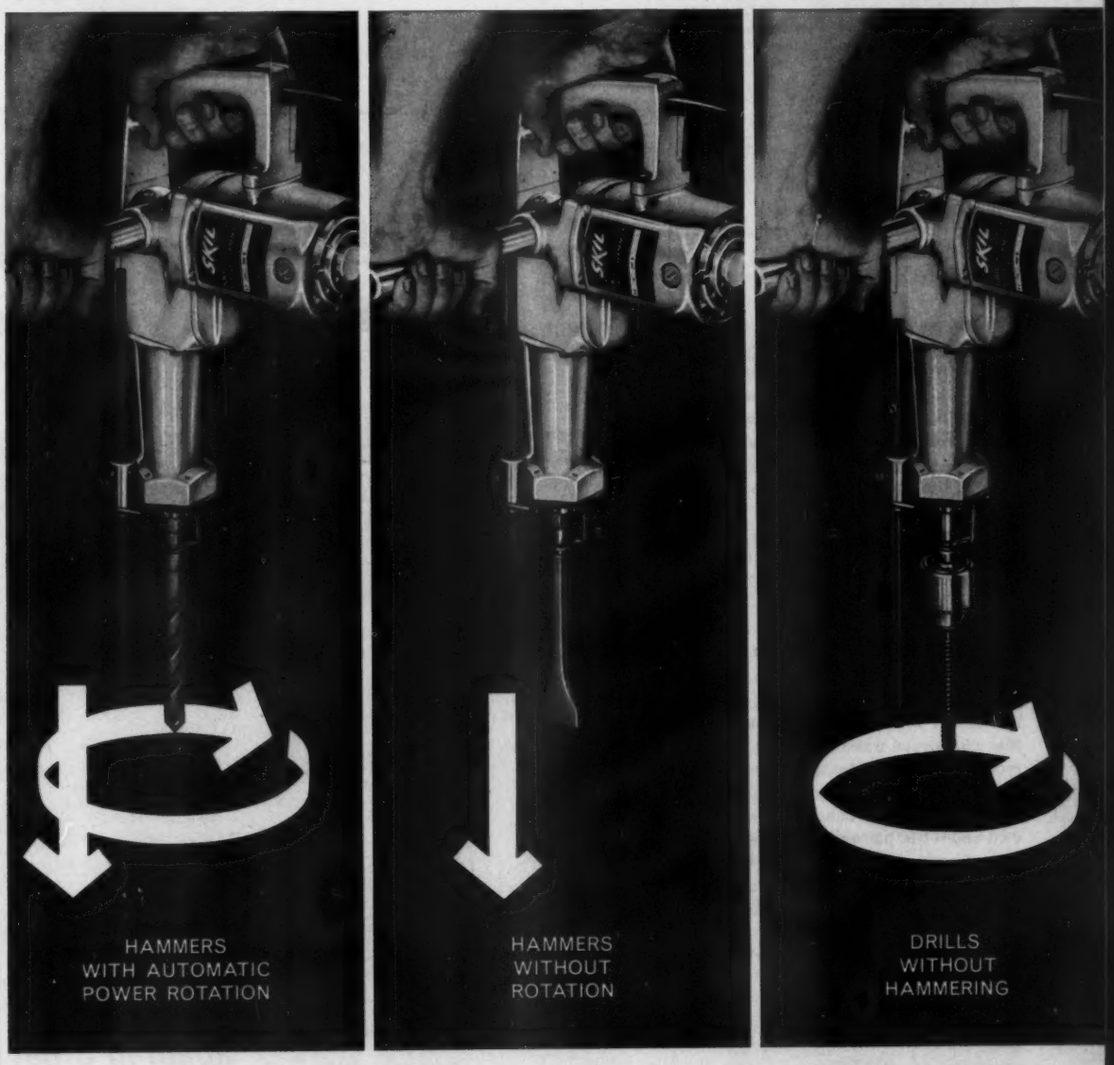
To form the deck, it was necessary to erect an intermediate arch halfway between two of the main arches. The falsework arch of single 4×4's helped support the steel bar joists that ran from one main arch to the next. Two-inch lumber was placed on top of the bar joists to receive the ¾-inch plywood decking. A tight network of steel was carefully positioned to reinforce the 3½-inch concrete shell.

With the four arches and connecting deck forms in place, the concrete was bucketed to the forms. Two cranes—one on each side of the same arch—placed the concrete so that the weight on the forms would be balanced.

Form panels simplify work

In the early stages of the construction, forming of the basement walls was a big and complicated job. Symons form panels simplified the work; the 2-foot-wide units were particularly adaptable to forming the two circular walls of the core building. They were also convenient for forming the crawl-space walls under the wings. Forming of these walls was

(Continued on next page)



New! Revolutionary Skil Roto-Hammer

Exclusive 3-way action obsoletes all other electric hammers!

It's actually 3 different tools in one:

Powerful hammer with automatic power rotation that drills holes in masonry up to 65 times faster than by hand . . . up to 5 times faster than ordinary hammers . . . without tiresome rotation of star drills.

Hammer without rotary action for all kinds of hammering jobs, including channeling, routing, chiseling, riveting, demolition work, setting self-drilling anchors.

Drill without hammering action for boring holes in masonry, wood, metal, or any material that can be drilled with standard electric drills.

Costs per hole are lowest of any hammer (see chart). Maintenance costs are lowest, too, because of unique "electro-pneumatic" drive. No springs to break . . . powerful hammering is air actuated.

Ask your Skil distributor for demonstration of Model 726 (½-1 inch) and Model 736 (1-2 inch). Or write for 8-page brochure. Skil Corporation, 5033 Elston Ave., Chicago 30, Ill. Attention: Dept. CCT-10.

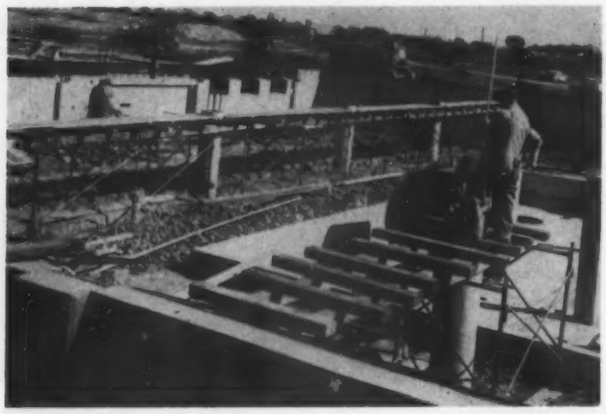
LOWEST COST PER HOLE
Based on 1000 holes (¾" x 4" deep) in masonry—labor at $3.00 per hr.

SKIL NO. 726 HAMMER	ORDINARY HAMMER
1 Carbide Bit* needed	24 Star Drills needed
19.38 hours of labor	100.4 hours of labor
$80.14 (labor & bit)	$337.20 (labor & bits)
8¢ per hole	34¢ per hole

*New SKIL Carbide Bits stay sharp 20 to 30 times longer than star drills.

SKIL ... and SKILSAW POWER TOOLS

For more facts, use Request Card at page 18 and circle No. 258



The ground floor of the gymnasium is under construction here; Patent tubular scaffolding supports the beam forms between the columns. Columns are formed with Econ-O-mold tubes. An Allis-Chalmers HD-11 backfills the wall, in the background.

(*Continued from preceding page*)

complicated by offset pilasters and stepped footings. The foundations also included a double wall with expansion joint where the wings joined the core.

Specifications required that new forms be used on the walls. On a rental-buy agreement, Berglund put some 34,000 square feet of forms on the job. The plastic-coated surface of the plywood panels gave a smooth finish to the concrete and also increased the number of possible reuses.

The usual width of the panel was 2 feet, but widths down to 1 inch were available for some of the work. The 1-inch width was a metal filler.

The high (up to 18 feet) circular wall forms of the core building required a special wale. Each wale was made up of four 2×2's so that it was possible to bend around the curve. The number of wales necessary was reduced by the steel-backed forms.

Because of the frequent irregularities in the walls, the panels were handled and set in place individually. No gang forming was used. Ready-mix concrete was chuted to the forms from Smith 7½-yard mixers mounted on White trucks.

The crawl-space columns for the academic wings were formed with the use of Deslauriers paper tube forms. The columns on the upper two floors were formed with Deslauriers steel forms.

Patent tubular scaffolding was used to support the floor and beam forms. Adjustable bar joists, furnished and installed by Adjustable Forms, Inc., Minneapolis, spanned the distance between the rows of scaffolding. A solid plywood deck supported the steel pans.

Carl Fehrenbacher superintended the job for Fred Berglund & Son. The foreman in charge of the swimming-pool roof was Eddy Stratford. Charles Morrow was the field representative for Childs & Smith.

THE END

Carl Fehrenbacher, superintendent for Fred Berglund & Son, Chicago, the general contractor, checks on the progress of floor forming.

Correction:

Miss Dorothy Lyman, Chief of Public Information, Vermont Department of Highways, was associated incorrectly in our December issue with the Maine Highway Department.

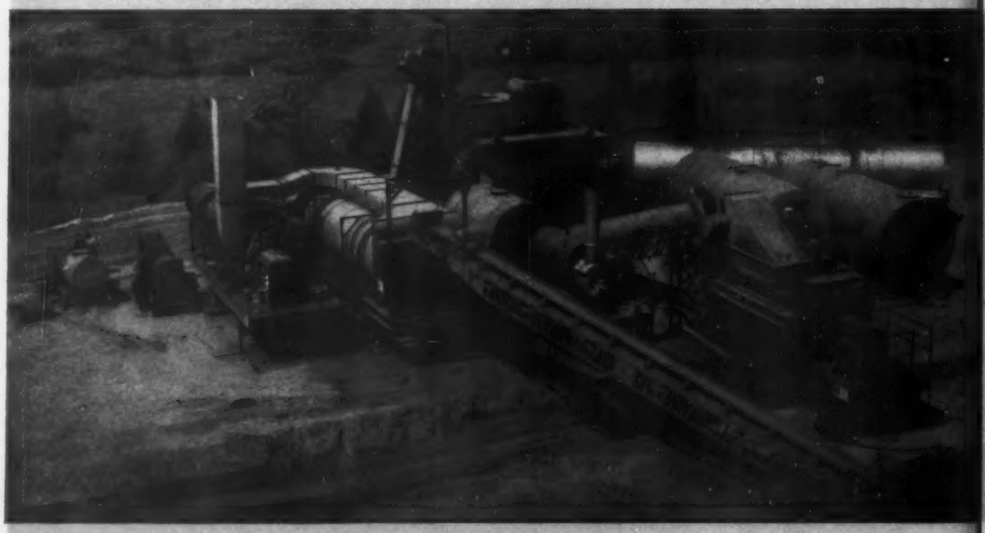
Safe driving techniques shown in Goodrich film

■ "Tommy Gets the Keys," a film on safe driving techniques, is dedicated to making the nation's youth safer drivers. Produced by B. F. Goodrich, Akron, Ohio, the film is endorsed by the National Safety Council.

Arrangements for such showings can be made through local Goodrich representatives.

Completely Wheel-Mounted

Batch-Type Asphalt Plants



Owners Say: *"We can move, set up, and be running again in 3 days — instead of a week"*

● H & B Mobile plant owners have found that the time they save in moving, setting up, and in mixing, enables them to get substantially more production, and to pay for their plant in a much shorter time.

These plants are completely wheel mounted, and can be ready to move in a matter of minutes. No crane is necessary for erection or disassembly. Flexible hose and plug type electric connections between permanent piping on the various units make possible quick connections in the field.

As one owner says: "With our other plants it takes a full week to move and set up again. With our H & B Mobile plant we can move, set up and be running again in 3 days." In other words, on every change of location, 3 days that would otherwise be spent moving can be used for production.

Another owner says: "Our H & B Mobile plant has enabled us to cut our moving costs by approximately 70%. Also, our production has been increased approximately the same 70%."

H & B Mobile plants are available in three sizes: Mobile 20 (40 to 70 t.p.h.), Mobile 40 (120 to 160 t.p.h.) and Mobile 60 (160 to 240 t.p.h.).

For further information see your H & B distributor or write direct.

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VARIOUS SIZES OF AGGREGATE for surfacing 18 miles of U. S. 285 north of Fairplay, Colo., are turned out by this double rock-crushing plant. The raw rock is obtained from a glacial deposit of gravel and boulders five miles north of Fairplay. Power for the conveyor is supplied by an International U-281 engine.

Buttenheim names Burton publisher of C&E

Donald V. Buttenheim, president, Buttenheim Publishing Corp., announces the appointment of Robert C. Burton as publisher of CONTRACTORS AND ENGINEERS magazine, a post Buttenheim is relinquishing because of added executive responsibilities.

Robert C. Burton, new publisher of Contractors and Engineers magazine.

Burton is a native of Cleveland, Ohio, where he attended Cleveland College of Western Reserve University. He joined the Buttenheim organization in June, 1951, after ten years' experience in advertising agencies and advertising departments. Prior to the move to BPC, Burton was advertising manager of The Brown Fence & Wire Co., Cleveland.

In 1955 Burton became Cleveland regional manager for C&E, and in 1959 he was elected to the board of directors of Buttenheim Publishing Corp. He is also a director of the Cleveland "t. f. club," an organization of publishers' representatives.

Burton is married and the father of two children. He will move his family from Cleveland to New York City early this year and will assume his new duties in March.

Roadside development data in HRB bulletin

■ The Highway Research Board, 2101 Constitution Ave., Washington 25, D. C., has issued "Roadside Development, 1959," which may be purchased for $1.20.

Details are given on the design of landscaping for urban and rural highways; soil-erosion control practices and materials; roadside design to reduce traffic noise; roadside maintenance as affected by work operations and highway design; seeding of highway slopes by helicopter; land use treatment plan in maintenance; and anti-litter campaigns to reduce maintenance work. The bulletin is well illustrated.

New C.I.T. representative

■ Donald R. Young has been named Virginia representative of C. I. T. Corp., New York City. He will be under the supervision of E. W. Ford.

The corporation's Philadelphia division has moved to 2 Penn Center Plaza. D. V. McCarthy, assistant vice president, is in charge of the division.

H&B ESTABLISHED 1867

Mobile 20 (40-70 T.P.H.)
Mobile 40 (120-160 T.P.H.)
Mobile 60 (160-240 T.P.H.)

All units mounted on rubber-tired trailers.

No crane needed for erection or dismantling.

Hinged jack legs or steel stools support all units in operation. No wooden cribbing.

All piping and wiring permanently installed.

All remotely located units driven by individual electric motors.

Diesel engine and generator for operating all electric motors.

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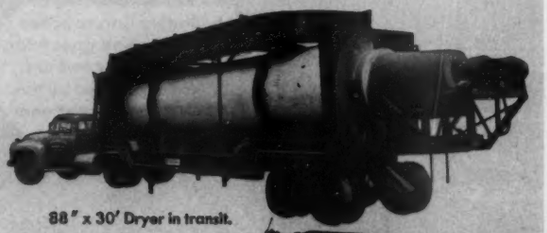
Portable insulated hot asphalt plant, with oil heater.

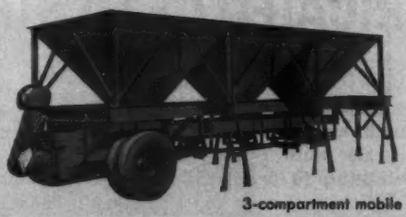
Plant arrangements are easily adaptable to special ground or site advantages or limitations.

Either conveyors or mobile elevators can be used.



88" x 30' Dryer in transit.

Insulated portable tank unit in transit.



3-compartment mobile feeder.

wholly owned subsidiary of AMERICAN HOIST & DERRICK CO.

For more facts, use Request Card at page 18 and circle No. 259

1960 ESTIMATES: STATE HIGHWAY CONTRACTS

(add 000 to dollar figures)

	1959	1960	% change
NEW ENGLAND			
Maine	$15,200	$20,300	+34
N.H.	27,000	9,000(6 mo.)	--
Vt.	30,270	10,700(6 mo.)	--
Mass.	--	--	--
R.I.	5,250	13,250	+152
Conn.	54,300	61,200	+13
MID. ATLANTIC			
N.Y.	226,500	300,000	+32
N.J.	--	--	--
Pa.	64,591	129,000	+100
E.N. CENTRAL			
Ohio	184,000	182,000(2)	-1
Ind.	64,300	65,500	+2
Ill.	202,500	(202,500)*	--
Mich.	200,000	241,000(3)	+21
Wis.	69,702	63,135	-9
W.N. CENTRAL			
Minn.	52,640	53,000	+.6
Iowa	72,800	75,000	+3
Mo.	$74,444	$50,000(3 mo.)	--
N. Dak.	35,350	28,000	-21
S. Dak.	34,000	36,000	+6
Nebr.	27,068	(27,068)	--
Kans.	53,200	55,000	+3
SO. ATLANTIC			
Del.	6,700	20,000	+199
Md.	29,000	30,000	+3
D.C.	24,979	29,633	+18
Va.	56,000	112,000(1)	+100
W. Va.	28,711	34,694	+21
N.C.	62,500	(62,500)	--
S.C.	54,430	55,000	+1
Ga.	66,096	(66,096)	--
Fla.	109,500	(109,500)	--
E.S. CENTRAL			
Ky.	63,000	--	--
Tenn.	59,000	(59,000)	--
Ala.	65,000	75,000	+15
Miss.	45,193	43,300	-4
W.S. CENTRAL			
Ark.	$41,400	$38,600	-7
La.	79,296	90,000	+13
Okla.	26,200	48,000	+83
Texas	275,000	240,000	-13
MOUNTAIN			
Mont.	20,600	40,000	+94
Idaho	16,500	25,000	+52
Wyo.	27,000	33,000	+22
Colo.	31,000	42,000	+35
N. Mex.	22,600	30,000	+33
Ariz.	34,000	40,000	+18
Utah	27,000	25,000	-7
Nev.	7,700	25,000	+225
PACIFIC			
Wash.	46,000	60,000	+30
Ore.	37,900	39,000	+3
Calif.	223,800	330,000	+47
Alaska	3,727	24,000	+544
Hawaii	6,704	20,010	+198

*figures in parenthesis: state expects awards to "equal or exceed" 1959 level.
(1) "approximately double 1959" (2) "minimum 165 million and possibly as much as 182 million". (3) for fiscal years

Road contracts to rise in '60

by FRANK KYPREOS, Director of Research

State highway departments plan to let 20 per cent more highway work in 1960 than they did in 1959. The value of contracts let will rise in 29 states and in the District of Columbia, will be at least as high as in 1959 in 8 states, and will fall in 7.

This forecast is based on the results of a CONTRACTORS AND ENGINEERS telegraphic survey addressed to the chief engineer or ranking executive officer of each of the 50 state highway departments and the District of Columbia department. In addition to the 41 tabulated here, 3 states were able to make estimates for only part of this year; 3 reported no 1960 estimate.

In terms of dollar volume, the biggest gains will be in California, New York, and Pennsylvania. These states expect to exceed their 1959 contract levels by 105, 74, and 64 millions of dollars, respectively. States whose estimates of 1960 awards are 25 to 100 per cent above last year's levels include Maine, Washington, Colorado, New Mexico, Montana, and Idaho.

But the leading gains percentage-wise are reported by the small states: Rhode Island, Delaware, and Nevada. They plan to increase awards by 152, 199, and 225 per cent, representing contract value gains of 8, 13, and 18 million dollars, respectively.

The two new states will make even more spectacular advances. Alaska expects to increase awards from $3.7 million in 1959 to $24 million in 1960—a net gain of 543 per cent. Hawaii will let $20 million of road work in 1960, $13 million more than last year.

The largest expected net decrease was reported by Texas, which plans to award $240 million of contracts this year compared to $275 million in 1959. The $35 million cutback is attributed to decreased federal funds and to the contract controls instituted by the Bureau of Public Roads in 1959.

New York reports that its $300 million program for 1959 shrank to $226.5 million because of delays in receiving federal funds.

Pennsylvania's 1960 schedule has been restricted, not only by federal contract controls but by lack of funds requested from the state legislature. The increase of 100 per cent in the 1960 program over 1959 is due to the fact that 1959 began with an unpaid balance of almost $227 million on 1958 contracts with major construction completed in 1959. Awards made in 1959 were only $64.5 million.

Kansas, Nebraska, Minnesota, and Arkansas indicated that their 1960 programs depended on reimbursement planning.

The uncertainty concerning payment schedules will no doubt affect other states' plans for 1960, particularly in the second half of the year. The current estimates of highway officials, nevertheless, add up to a near-record level for 1960 state highway awards. THE END

THE MAN FROM HOBBS SAYS: THIS ONE HAULS THE CONCENTRATED, BIG LOADS--UP TO 65,000 POUNDS!

This photo is absolutely unretouched. Get a ruler and check for yourself the minimum deflection caused by this 48,000-lb. International TD24!

ITS SIDE RAILS ARE FABRICATED OF T-1 STEEL

MAKES FSRF STRONG, RESILIENT—

FSRF—Hobbs FABRICATED SIDE RAIL FLOAT—attains both its strength and light weight through use of miracle T-1 steel in its side rails. T-1 will flex three times as far as carbon steel and return to its original position — flexibility that enables the FSRF to withstand top shock loads, lengthens its life as a trailer.

—YET LIGHT ENOUGH FOR HIGHWAY USE!

Amazing thing is that the 35-foot FSRF weighs only 11,148 pounds — yet is rated for a load of 65,000 pounds, concentrated in an area of as little as 16 feet. A centerbeam float big enough to handle this concentrated load will usually weigh 14,000 pounds or more — which means simply a 3,000-pound net gain in legal payload capacity whenever you have to use a big trailer over the highway.

The man from Hobbs can give you more details. Call him today, or write to us at the address below.

Another fine example of

HOBBS TRAILERS

OIL FIELD AND MACHINERY TRANSPORTS

THE MAN FROM HOBBS
- KNOWS TRAILERS
- KNOWS YOUR NEEDS
- SERVES YOU WELL
- IS NEAR YOU

SEE HIM FOR ALL YOUR HAULING JOBS!

HOBBS TRAILERS
609 NORTH MAIN FORT WORTH, TEXAS

SALES AND SERVICE THROUGHOUT THE WESTERN HEMISPHERE

For more facts, use Request Card at page 18 and circle No. 260

Two off-highway trucks perform work of six

Two I-H Payhauler Model 65 off-highway trucks are performing a good-sized task for the Walker Cut Stone Co., Milford, Kans.

The trucks, fitted with the recently announced corrugated bodies, replaced a fleet of six highway-type trucks in hauling raw limestone from the quarry to a crushing and washing plant one mile away.

Capacity of the crusher is 15 tph, and the International units easily keep ahead of the crusher's output, even though they usually haul less than normal loads.

In addition to requiring only two drivers instead of six, the Walker company also is making substantial fuel savings and enjoys a much safer operation than when six vehicles sped to the crusher over a narrow road.

For further information write to the International Harvester Co., Dept. C&E, 180 N. Michigan Ave., Chicago, Ill., or use the Request Card at page 18. Circle No. 94.

PRODUCTIVITY

Equipment Application Reports

Increase production with slackline bucket

A Sauerman 2-yard-capacity slackline cableway bucket was installed to replace other excavating equipment at the Connersville Gravel Co., Inc., sand and gravel plant, Connersville, Ind. The company's dragline had been satisfactory on short hauls but failed to maintain production requirements when operating spans increased to over 600 feet.

The new bucket works 50 feet below water, digging flat rock and sand.

According to the company, the diesel-powered slackline has stepped up production, and its fast, smooth operation has also reduced maintenance costs. Operating costs from pit to stockpile are estimated to be about 8 cents a yard, for labor, power, and maintenance.

For further information write to Sauerman Bros., Inc., Dept. C&E, 620 S. 28th Ave., Bellwood, Ill., or use the Request Card at page 18. Circle No. 92.

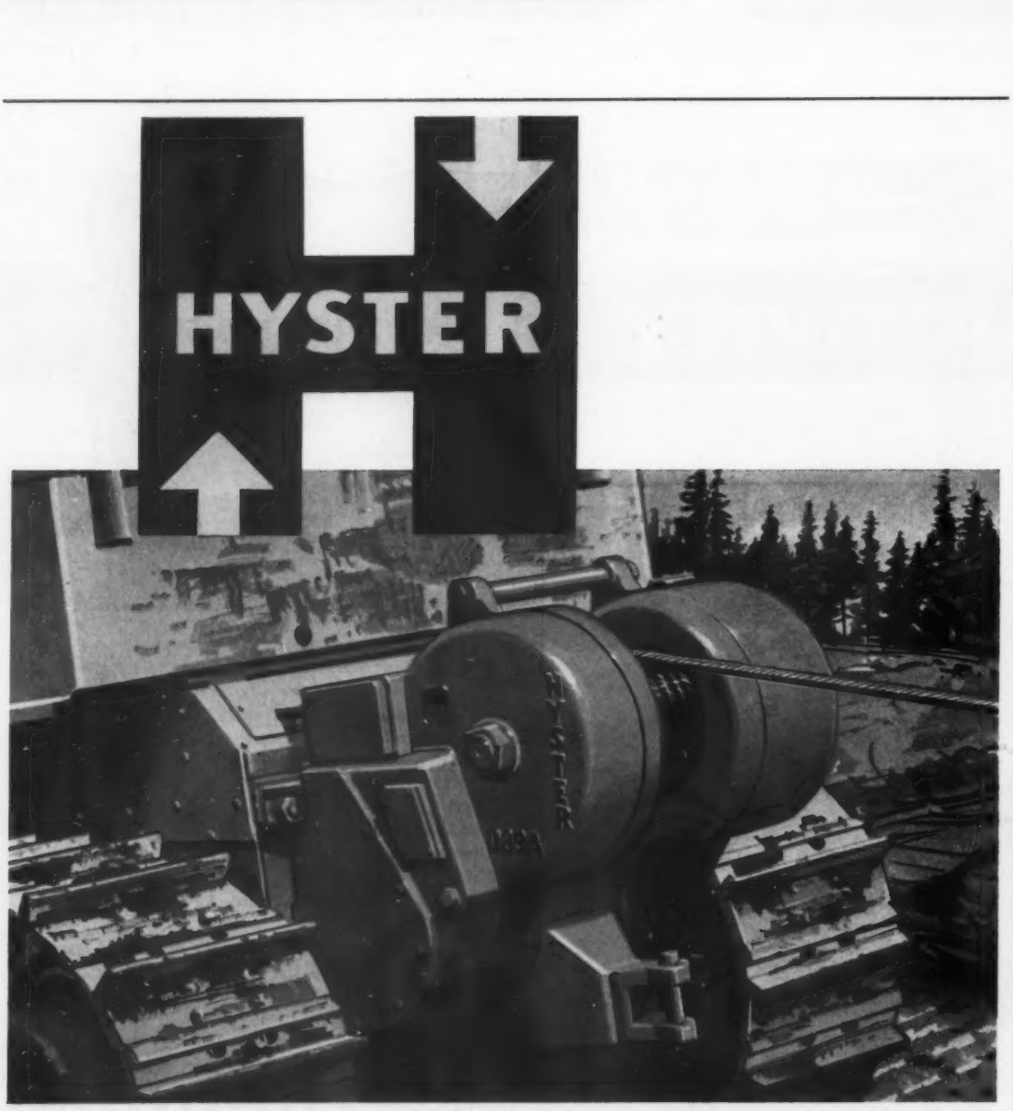
Flotation tires aid in compaction job

Remounting a Lima Roadpacker and Mack 4-wheel-drive tandem-axle truck with flotation tires enabled Sugden & Sivier, Inc., of Detroit, to complete the soaking and compacting portion of their Oscoda, Mich., airbase subcontract on schedule despite sand so fine that equipment with original tires was unable to move.

The Model B62 Mack was mounted with a 5,000-gallon water tank for spraying the sand before compacting. The Lima Roadpacker was remounted with Harmo 1850×20 flotation tires and the Mack with 1850×20 rear and 1540×20 front flotation tires. Downtime because of bogging down was eliminated.

Write to the Harmo Tire & Rubber Corp., Dept. C&E, 1800 W. Fort St., Detroit 16, Mich., or use the Request Card at page 18. Circle No. 2.

This special turntable, in use on the breakwater reconstruction at Redondo Beach, Calif., was designed and fabricated by M. P. McCaffrey, Inc. Rock-laden semi and flatbed rigs drive out on the breakwater and, after being unloaded, back onto the turntable and are swung about to face the shore. A 9,000-pound rock bucket that places stone weighing from 1 to 20 tons was also designed especially for the project by the McCaffrey firm. Work is being handled by the U. S. Army Corps of Engineers. For further information write to **M. P. McCaffrey, Inc.,** Dept. C&E, 2121 E. 25th St., Los Angeles 58, Calif., or use the Request Card at page 18. Circle No. 106.



Newest winch equipment for Caterpillar-built tractors...

HYSTER has it!

Everything new but the name—completely redesigned — more rugged — simpler to operate and maintain. Four new models for Cat D9, D8, D6 and D4 tractors—available for direct and torque converter drive or power shift machines. Details from your Caterpillar-Hyster dealer or write Hyster Company now.

Caterpillar and Cat are registered trademarks of Caterpillar Tractor Co.

TRACTOR EQUIPMENT DIVISION—Construction and logging equipment.
INDUSTRIAL TRUCK DIVISION—Lift trucks, mobile cranes, straddle carriers.
MARTIN TRAILER DIVISION—Heavy machinery hauling trailers.
INTERNATIONAL DIVISION—Overseas manufacturing, sales and service.
FACTORIES: Portland, Oregon (Home Office); Danville, Peoria, Kewanee, Illinois. Sao Paulo, Brazil; Glasgow, Scotland; Nijmegen, The Netherlands; Sydney, Australia (Licensee)

HYSTER COMPANY
TRACTOR EQUIPMENT DIVISION
Post Office Box 328, Peoria, Illinois

For more facts, use Request Card at page 18 and circle No. 261

Span screed solves bridge deck problem

Structures Inc., of Greenville, S. C., and Ballenger Paving, also of Greenville, had a problem on a bridge deck located on U. S. 29 north, between Athens, Ga. and Anderson, S. C. The concrete was 1 to 2-inch slump with a retarding agent. The span was 28 feet wide, although the rails for the screed to ride on were 34 feet apart and 10⅜ inches above the slab. This meant making a special underslung beam, which was supplied by the Stow Mfg. Co.

Also, the start of the slab was on a 45-degree angle to the side rails

A special Stow 28-foot screed strikes off concrete for a bridge deck. Rails extend beyond the slab so the entire skew section can be screeded.

which ordinarily would make it almost impossible to screed the triangular section. To solve this, the company extended the rails upon which the screed was resting beyond the slab so that the entire 45-degree triangular section could be screeded. A plastiment retarding agent was used to retard the setting up of the concrete some 3 to 4 hours.

A Stow Model HC-175 Hy-Cycle vibrator with a 1¾-inch vibrator head was used to consolidate the concrete as it was poured ahead of the vibrating screed. After 20 to 30 feet had been poured, the screed was started up and pulled along the surface of the slab.

For further information on vibrating screeds, write to the Stow Mfg. Co., Dept. C&E, 443 State St., Binghamton, N. Y., or use the Request Card at page 18. Circle No. 154.

Shown here charging the 4-cubic-yard batching plant, the Work Bull 1001 handled a variety of jobs, substantially increasing effective working capacity.

Loader plays key role in concreting project

A Massey-Ferguson Work Bull 1001 tractor shovel played an important part in laying concrete for a 5-million-bushel grain storage terminal in Plainview, Texas.

In a timed test, crack operator Henry Jackson loaded out a 4-yard batching plant (with sand, aggregate, and cement) in 2 minutes and 38 seconds under the following conditions:

1. Stockpiles were over 100 feet away.

2. Besides loading in the sand and aggregate, Jackson's test included transporting cement to the plant and dumping it in. (Loading into the bucket was handled by two helpers.)

Jackson works for the R. L. Collins Construction Co., of Plainview.

According to Collins, the Work Bull was used on this job for everything from a loader to a crane, greatly increasing effective working capacity.

For further information write to the Massey-Ferguson Industrial Division, Dept. C&E, 1009 S. West St., Wichita, Kans., or use the Request Card at page 18. Circle No. 103.

New cutting tool burns through concrete

Sparks fly as the Oxweld ACL-4 Powder Lance completes a vertical cut in the 18-inch-thick concrete flood wall.

Endicott, N. Y., was the scene of the formal introduction of a new tool known as the Oxweld ACL-4 Powder Lance. Developed by the Linde Co., a division of the Union Carbide Corp., the tool is said to be capable of cutting through concrete, metal, or any other known hard material.

At Endicott, the Powder Lance was used near the Vestal Avenue Bridge over the Susquehanna River to burn through two 18-inch-thick reinforced concrete flood walls as part of a demolition job on the local flood-control program. The job involved the removal of the two 17-foot-high flood walls. Two vertical cuts were made in each of the two sections to be removed. A hole was then pierced in each of the resulting sections slated for removal so that cables could be run through the concrete. As each section was secured by a crane, a horizontal cut was made across the base of the secured section, making it possible for the crane to lift it away.

The Gasparini Excavating Co., Inc., which handled the demolition job, estimated the tool's cutting speed to be approximately 2 to 3 linear feet per hour. With the Powder Lance it was also possible to pierce a hole through the 18-inch-thick wall in 2 minutes and 30 seconds or at a speed of better than 7 inches per minute.

For further information write to the Linde Co., division of Union Carbide Corp., Dept. C&E, 420 Lexington Ave., New York 17, N. Y., or use the card at page 18. Circle No. 75.

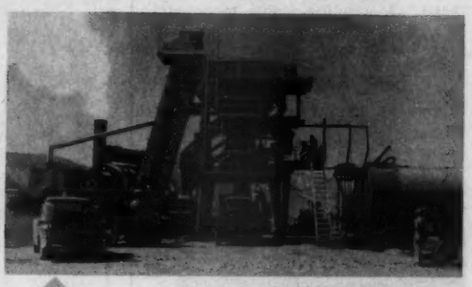
MADSEN Money-Makers for the '60s

1960 commemorates MADSEN's 50th year of designing and manufacturing asphalt plants and asphalt plant equipment.

The record tonnage production and money-making ability of today's MADSEN plants is the result of the experience and know-how gained during these 50 years of service to the asphalt paving industry.

MADSEN's years-ahead engineering gives you much more than high daily production. MADSEN Asphalt Plants have always been noted for their low operating costs and easy, low-cost servicing and maintenance. Add to this complete portability, cleanest operation and improved mixing action . . . and you can see why the purchase of a MADSEN Plant is your logical "first step" for more profits in the '60s.

Your MADSEN Distributor has all the facts . . . see him today.

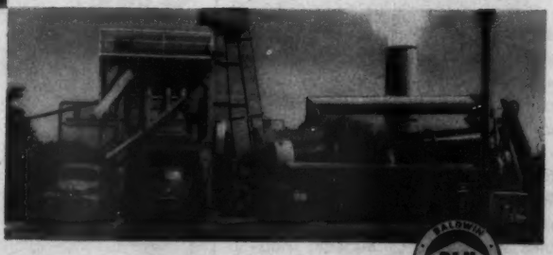


MADSEN MODEL 481 ASPHALT PLANT . . . the industry's outstanding batch capacity asphalt plant, built in 4000 lb., 5000 lb. and 6000 lb. capacities. Factory-matched unit sections assure quick field erection. Plant features faster mixing, exclusive bin design for more uniform aggregate withdrawal, roll-away weigh-box for quick, easy servicing and maintenance, and finger-tip control of weighing and mixing operations. (Fully automatic operation is optional.) Capacities up to 300 T.P.H.

THE LITTLE MONSTER . . . this complete asphalt mixing plant on wheels is designed for fast-moving, fast set-up and substantial daily production. Plant shown is owned by a State Highway Department. It is complete including two MADSEN 32" x 10' Dryers, a MADSEN 2-compartment portable feed bunker and dual cold stone elevators. Mixer unloading skip loads asphalt into trucks. Plant is rated at 30 T.P.H. on a one-minute mixing cycle.

MADSEN HIGHWAY-AIRPORT BASE STABILIZER PLANT . . . newest addition to the MADSEN line. This plant is a high-production, portable plant designed specifically to meet today's exacting requirements in regard to precision proportioning and control of materials. The twin-shaft continuous-type pug mill mixer is designed for producing 600 T.P.H. of stabilized mix. Plant features rugged construction, mechanical simplicity and easy maintenance.

MADSEN 2000-LB. SPECIAL ASPHALT PLANT . . . a small plant with big plant features. The 2000-lb. SPECIAL is ideal for the not-too-large contractor, the municipality and the large contractor who wants a small type of operation for producing approximately 480 tons per 8-hour day (on a one-minute mixing cycle). It's an ideal plant for handling those jobs up to the 10,000-ton class.



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MADSEN maintains a complete parts stock in Los Angeles and Lima, Ohio

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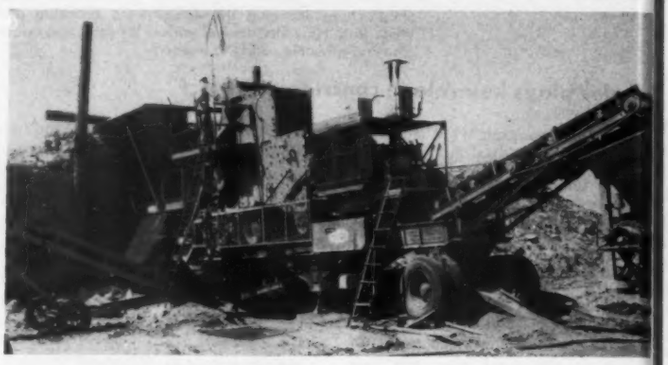
Construction Equipment Division
BALDWIN-LIMA-HAMILTON CORPORATION

ASPHALT PLANTS • PUG MILL MIXERS • AGGREGATE DRYERS • DUST COLLECTORS • ROAD PUG TRAVEL MIX PLANTS • WEIGH BATCHERS • DUST WASHERS • FEED BUNKERS FEED TUNNELS • ASPHALT TANKS • ASPHALT & FUEL PUMP UNITS • CONCRETE FLOAT FINISHERS FOR AIRPORTS AND HIGHWAYS • HIGHWAY-AIRPORT BASE STABILIZER PLANTS

For more facts, use Request Card at page 18 and circle No. 262

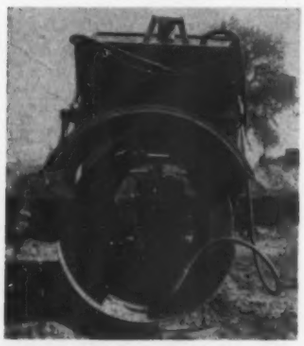


To handle a bothersome mixture of rock with a high percentage of fines and wet sticky clay, Kaser Quarries, at Red Oak, Iowa, installed a Universal Impact Master and Wobbler feeder plant. According to the company, the plant not only produced good rock, but material clean enough to qualify as Type A asphalt mix. In addition, Kaser was able, with further processing, to use the material passing through the Wobbler bars, drastically reducing the high percentage of waste in the past. For further information write to **The Universal Engineering Corp.**, Dept. C&E, 625 C Ave. N. W., Cedar Rapids, Iowa, or use the Request Card at page 18. Circle No. 72.

New machine cuts costs by casting pipe in trench

A machine that casts concrete pipe directly in the trench at a reported 15 per cent average saving in cost is offered by the No-Joint Concrete Pipe Co.

The machine, shaped like a round-bottomed "boat," is lowered into the trench. As ready-mix concrete is poured into a hopper, the machine moves forward in the trench, extruding the formed pipe in its "wake." A gasoline motor mounted



Shown here is the extrusion end of the No-Joint machine.

at the front of the unit provides the power for winching forward and for vibration and compaction of the concrete as it is pressed through to form the pipe.

During construction the upper half of the pipe is supported by sectional aluminum forms that are placed as the machine moves along; the trench itself forms the lower half. The aluminum sections are removed and made ready for re-use after initial set of the concrete.

Pipe sizes range from 2 to 6 feet in diameter. Depending on diameter required, the weights of the No-Joint machines vary from 2 to 5 tons. The pipe can be cast in place at speeds up to 120 feet per hour.

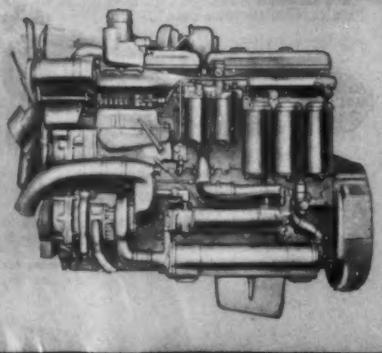
According to California contracting firm Monolithic Pipe Lines, Inc., of Palo Alto, this machine's rapid rate of production lowers requirements for men and equipment. Material transportation and storage costs are said to be reduced by the rig, and the narrower trenches required reduce right-of-way and resurfacing costs.

For further information write to the No-Joint Concrete Pipe Co., Dept. C&E, Box 512, Yuba City, Calif., or use the Request Card at page 18. Circle No. 40.

Keep full loads on the move full time with exclusive Planet Power-steering. Full power on both tracks, *full time*, is the answer! And Hi-Lo on-the-go power-shifting lets you match power to condition, instantly, and keep the yard-boosting advantage of uninterrupted momentum.

You speed-up all four steps of the push-loading cycle with TD-25 torque-converter and planetary system teamwork! 1) You slow down by power-shifting down and using decelerator to get feather-touch contact; 2) power-shift either track up or down to maintain solid pusher contact on curves; 3) get gear-higher kick-outs, with on-the-go power-shifting; 4) reposition faster, with higher-than-ordinary reverse! Two "25s" tandem-pushing the International 295 Payscraper®, and the third, scarifying, belong to contractor Ed Bentley, Sylacauga, Alabama — building superhighway near Birmingham.

PLANET
Power-steering...
HI-LO
power-shifting...
COME AS
standard equipment
ONLY
in the new TD-25



The International DT-817 engine—single power source used in both *pushers* and *scrapers*—an *industry first* in power standardization. You'll find this big new direct-start, 6-cylinder turbocharged diesel powering the full line of International two and three-axle Payscrapers; Paywagons®; and end-dump Payhaulers.® *Plus* the new TD-25I Dual valving of this high-torque, 230-hp power plant provides for peak turbocharging efficiency, to develop full power from sea level to timberline!

The 3-yard central plant mixer in this setup was easily charged at a rate of 72 cubic yards per hour through the use of a 20-ton surge bin atop a portable Conveyex weigh batcher.

Weigh-batcher capacity increased with surge bin

A 20-ton surge bin atop an Engineered Equipment portable Conveyex weigh batcher enabled Allison & Haney, Albuquerque, to easily charge its 3-yard central plant mixer at a rate of 72 cubic yards per hour on a project in Raton, N. Mex. (Production well in excess of this figure is possible with a shorter mixing cycle or larger mixing equipment, states the manufacturer).

Two Nomad portable cement silos with a combined capacity of 600 barrels of bulk cement fed the cement-weighing compartment of the Conveyex. A 30-inch conveyor moved the combined materials to the mixer.

The surge bin is charged by a 24-inch stone and 18-inch sand conveyor. All components are arranged for ready portability from job to job.

For further information write to Engineered Equipment, Inc., Dept. C&E, 1001 Linden Ave., Waterloo, Iowa, or use the Request Card at page 18. Circle No. 114.

Salt-stabilize road for $739.98 per mile

Michigan's Otsego County Road Commission experimented with salt in 1958 on a 3-mile strip of road with the goal of finding a satisfactory, economical way to stabilize existing bases in preparation for a seal coat.

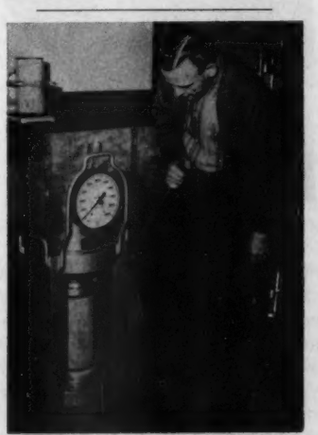
Selected for the test was a stretch on Townline Road from M32 three miles west of Gaylord to County Road.

The ditching was fairly good, but 3 inches of gravel was added. Salt was added at the rate of 20 tons per mile on a 20-foot base. The 3-mile stretch reportedly was stabilized by county maintenance crews at a total cost of $2,219.94 or $739.98 per mile.

Two months after completion of the stabilization process, the road was primed and double sealed at a cost of $2,400 a mile.

Otsego officials report that the road has stood up without a blemish under a year's use, and that the salt has held down frost heave.

For further information write to the Salt Institute, Dept. C&E, 33 N. LaSalle St., Chicago 2, Ill., or use the card at page 18. Circle No. 110.



Testing a concrete cylinder sample, this Soiltest unit embodies a powerful hydraulic system that applies pressures up to 200,000 pounds. Conversion to psi is done by use of a chart. After the concrete cylinder has failed, the total load is recorded by means of a maximum load indicator and concrete strength can be rapidly determined. For further information write to Soiltest, Inc., Dept. C&E, 4711 W. North Ave., Chicago 39, Ill., or use the Request card at page 18. Circle No. 57.

←For more facts, circle No. 263

andard equipment at no extra cost, the new p TD-25 gives you the International®-proven ol combination that has been beating king-sized h-steered crawlers in yardage for years!

u get combined Planet Power-steering and Hi-Lo e-go, power-shifting exclusively in the new national TD-25. And you get this basic, built-in n advantage in your choice of torque-converter nchromesh model!

th this and all its other big advantages, the TD-25 utearn other big rigs up to 50%—on push-load- nd pulling big drawbar tools such as shale-shat- scarifers!

o "dead-track drag" or "gear-shift lag"! t Power-steering gives you full-time "live" power raction on both tracks, to make full-load turns—o eliminate load-limiting "dead-track drag." And Hi-Lo on-the-go power-shifting instantly matches power to conditions to prevent load-losing "gear-shift lag."

Hi-Lo power-shifting makes the TD-25 the industry's only 4-speed torque-converter crawler and the only one with load-matching efficiency-range control. In the synchromesh transmission "25," the Hi-Lo planetary system gives eight speeds forward and reverse—with cycle-speeding, up-or-down, on-the-go power-shifting with "finger-tip" ease!

Power-shift and power-steer the new "25" with full king-size loads—around curves, upgrade, anywhere. Prove what it means to command full-time, full-load ability to outearn clutch-steered king-sized crawlers, up to 50%. Measure all the "25's" standard equipment extra value features! See your International Construction Equipment Distributor for a demonstration!

International®
Construction Equipment

A COMPLETE POWER PACKAGE: Crawler and Wheel Tractors... Self-Propelled Scrapers and Bottom-Dump Wagons... Crawler and Rubber-Tired Loaders... Off-Highway Haulers... Diesel and Carbureted Engines... Motor Trucks... Farm Tractors and Equipment.

International Harvester Co., 180 North Michigan Ave., Chicago 1, Ill.

An M. A. Gammino Construction Co. supervisor uses the 2-way Motorola mobile radio in his car to inform job supervisors of an equipment breakdown.

Mobile radio system covers 60-mile range

Two-way radio gives the M. A. Gammino Construction Co., of Providence, R. I., the long-range communications it needs to cover extensive highway construction jobs. Ranges upward of 60 miles from base to mobile units are an everyday occurrence for Gammino, with fringe reception of 75 miles good enough to be used at times.

On a recent superhighway project, the company held four contracts covering earthmoving and rock blasting to final paving on about 24 miles of roadway. With three of the jobs located near the Rhode Island line and the fourth in Connecticut, 80 mi from Providence, the project provi a real test for the radio communi tions system.

Use of Motorola equipment and t strategic placement of an antenna a high tower overcame hilly terr problems and supplied communi tions throughout Rhode Island, a into Massachusetts and Connecti as well. An omnidirectional anten was mounted on a 75-foot pole, ena ing the 250-watt transmitter to rea all three states without the use o repeater or several antenna sites.

With a Motorola mobile radio each foreman's and supervisor's v hicle, a breakdown on any job was r ported immediately to one of fo master mechanics working along t highway project, so that help a parts could be dispatched imme ately.

For further information write Motorola, Inc., Dept. C&E, 4501 Augusta Blvd., Chicago 51, Ill., or u the Request Card at page 18. Circ No. 97.

If you keep your EYE on the profit picture! . . .

...YOU'LL CHOOSE AN EIMCO!

Before you decide to invest in any crawler tractor answer this one important question:

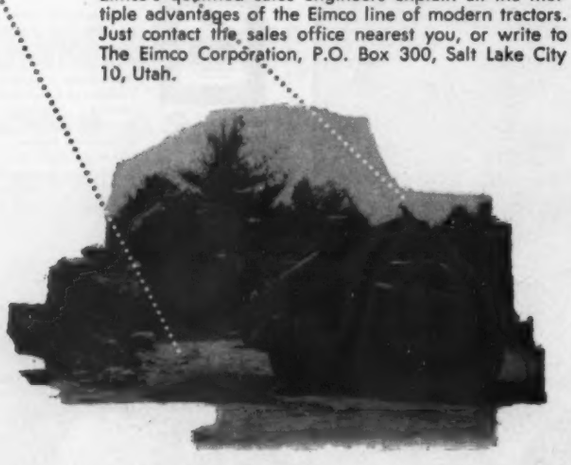
HAVE YOU SEEN AN EIMCO IN ACTION?

If your answer is no, you owe it to yourself and to your company to compare the modern Eimco tractor unit with any other make of comparable, or even greater size. If your answer is yes, chances are you've already ordered an Eimco!

Compare how the Eimco 103 . . . the Eimco 105 . . . or the Eimco 106 lines of tractor units will outpull, outpush, outmaneuver, outperform and outlast any other crawler tractor in their fields . . . and with greater flexibility in use.

The reasons lie in Eimco's unique combination of important exclusive features, including "Unidrive" transmission, single stage Torque Converter, Dual Final Drives, up-front operator position, patented Unit Construction and dozens of others, too numerous to list here.

To up your profits and productivity, let one of Eimco's qualified sales engineers explain all the multiple advantages of the Eimco line of modern tractors. Just contact the sales office nearest you, or write to The Eimco Corporation, P.O. Box 300, Salt Lake City 10, Utah.



EIMCO . . .
the modern line of Tractors!

103	105	106
100 H.P.	143 H.P.	205 H.P.

- Excavators
- Tractors - Dozers
- Front End Loaders
- Log Loaders
- Special Steel Mill Excavators and F.E.L.'s

For details and specifications on any of the Eimco units write Dept. G-1, The Eimco Corporation, P.O. Box 300, Salt Lake City 10, Utah, U.S.A.

"ADVANCED ENGINEERING AND QUALITY CRAFTSMANSHIP SINCE 1884"

THE EIMCO CORPORATION

TRACTOR LOADER DIVISION

454 SOUTH 4TH WEST
SALT LAKE CITY, UTAH — U.S.A.

EXPORT OFFICE: 51 - 52 SOUTH STREET, NEW YORK, N. Y.
BRANCHES AND DEALERS IN PRINCIPAL CITIES THROUGHOUT THE WORLD

B - 554

For more facts, use Request Card at page 18 and circle No. 264

Conveyor in gravel pit reduces maintenance cost

A Ropebelt conveyor, operating b tween the gravel bank and aggrega preparation plant in the Arcole-Mi west Corp.'s Algonquin, Ill., gravel p reportedly has carried more than

On the Ropebelt unit, two paral wires substitute for the convention rigid frame of belt conveyors.

million tons of gravel with no bearin failures or other idler maintenan expense. Also, over half of the belti that was originally installed is st in use.

This conveyor is designed with t parallel wire ropes substituting fo the conventional rigid frame.

According to the company, the ma chine also offers greater capacity b cause the trough angle increases up t 35 degrees where the idler is und load.

For further information write t the Diamond Iron Works, division the Goodman Mfg. Co., Dept. C& 4834 Halsted St., Chicago 9, Ill., or u the Request Card at page 18. Circ No. 113.

Concrete is elevated by three belt conveyors

All the concrete in the three-story Civic Center in Gadsden, Ala., was elevated on Morgen hydraulic-drive belt conveyors.

The Gethlefs & Hannon Construction Co., of Anniston, Ala., began the job with two Morgen 40-foot conveyors, then bought a 56-foot-long unit to handle material for the upper floors. The latter conveyor, states the company, places concrete at a discharge height of 35 feet with no separation whatever.

The company further states that these units have cost nothing to maintain so far, and that each conveyor will outperform a ¾-yard crane with a single bucket.

These pan-type models are also used as flat conveyors to move forms and other building materials.

For further information on belt conveyors, write to the Morgen Mfg. Co., Dept. C&E, 1115 N. Broadway, Yankton, S. Dak., or use the Request Card at page 18. Circle No. 43.

Morgen hydraulic-drive belt conveyors place concrete for a building in Alabama.

Utility-truck bodies lower operating costs

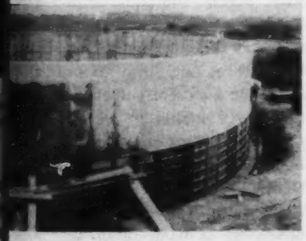
A fleet of utility trucks reportedly lowered operating costs and increased efficiency in the field for the contracting firm of James D. Morrissey, Inc., Philadelphia, Pa. The bodies were manufactured by the Reading Body Works, Inc.

Four different types of these vehicles are being used by Morrissey for road-building and other construction

projects, with each body type requiring special compartment arrangements and equipment. The bodies were made for use by mechanics, foremen, and survey crews.

Truck bodies used by mechanics have specially ventilated compartments for oxygen and acetylene-burning outfits. The burning gear can be removed from the vehicle in minutes and moved closer to a job, or it can be operated in the truck.

For further information write to the Reading Body Works, Inc., Dept. C&E, 420 Gregg Ave., Reading, Pa., or use the Request Card at page 18. Circle No. 93.



Hurricane winds failed to cause any serious damage to the forming for the concrete tanks of the Hitchcock, Texas, sewage-treatment plant. Contractor on the job was the Mainland Construction Co., of Texas City. Winds up to 105 mph whipped right across the job, but in spite of this, no forms were lost; a few, knocked out of line, were easily re-erected; and concrete for the circular tank shown here was placed shortly afterward, the contractor reported. The Uni-Form panel system was used to form the concrete on this job. For further information write to the **Universal Form Clamp Co.**, Dept. C&E, 1238 N. Kostner Ave., Chicago 51, Ill., or use the Request Card at page 18. Circle No. 107.

For more facts, circle No. 265→

Now "trade" dead weight for payload..and haul 40% faster!

Heap-load the big-target Payhauler body in minimum time. Strong rock-ribbed corrugations absorb shock—resist wear and distortion. Choose the "95" with power-shift Torque-Converter, or 9-speed air-shift transmission.

New strength-multiplying corrugated body design results in payload-gaining weight reduction of both International Payhauler models. New "95" capacity is increased to 27 tons—and the new "65" becomes the only 19-tonner on the market!

Look at those exclusive, rock-ribbed body corrugations! International applies this strength-multiplying principle to reduce Payhauler® body weight by an amazing 30%! You "trade" 2½ tons of power-wasting dead weight for 3 bonus tons of payload capacity in the new 95 Payhauler!

New high-torque, high-output diesel power highballs 27-ton payloads up to 40% faster than the former "95" could haul only 24 tons! The new 375 hp DT-817 International diesel engine gives the new 95 Payhauler the wallop of 40 extra turbocharged "horses."

Prove to yourself that top load-carrying capacity plus top power-to-weight ratio give 95 Payhaulers tremendous profit-earning advantages. Add up other big Payhauler exclusives: fast reverse, up to 7.1 mph. for spotting speed; big-target bodies for loading zip; 11-second inverted-hoist dumping; load speeding safety of torqmatic braking and positive power-steering! Let your International Construction Equipment Distributor demonstrate!

International® Construction Equipment

International Harvester Co., 180 N. Michigan Ave., Chicago 1

A COMPLETE POWER PACKAGE: Crawler and Wheel Tractors... Self-Propelled Scrapers and Bottom-Dump Wagons... Crawler and Rubber-Tired Loaders... Off-Highway Haulers... Diesel and Carbureted Engines... Motor Trucks... Farm Tractors and Equipment.

Working on the new Interstate Highway 80, near Menlo, Iowa, this Cedarapids bituminous paver helped completion of the job on time.

Bituminous mixing, paving equipment scores in Iowa

The Concrete Materials & Construction Co., Cedar Rapids, Iowa, recently supplied and laid more than 60,000 tons of asphaltic concrete for a 6-mile section of the new Iowa Interstate Highway 80 near Menlo. To produce the concrete, the firm used a Cedarapids Master-Mixer continuous-type bituminous mixing plant, which featured a capacity of 178 to 207 tph in a 9½-hour day.

The material was to be laid as a [illegible] inch Type A binder course and 1[illegible] inch Type A surface course. T[illegible] shoulders consisted of 6-inch ro[illegible] stone, with 1½-inch Type A surf[illegible] course. A Cedarapids bitumino[illegible] paver was used, laying both cour[illegible] at a speed of 45 fpm.

Although the contracting firm w[illegible] several weeks behind the regu[illegible] starting date, and weather and oth[illegible] conditions caused further delay, t[illegible] job was completed on time.

Throughout the entire operati[illegible] maintenance costs for the Cedarapi[illegible] equipment were low, and there was[illegible] minimum of downtime.

For further information write [illegible] the Iowa Mfg. Co., Dept. C&E, 9[illegible] 16th St. N.E., Cedar Rapids, Iowa, [illegible] use the Request Card at page [illegible] Circle No. 74.

UNIFORM COMPACTION WAY DOWN DEEP

Exclusive with Yuba-Southwest Compaction Rollers: Independent oscillation gives constant wheel load — regardless of soft spots or boulders.

You'll find a flexibility and much greater compaction uniformity over conventional single box type rollers in the patented design now available in Yuba-Southwest Multiple-Box Rollers.

The amazing amount of work these units will do has been thoroughly proved by tests under all earthfill conditions. Uniform compaction of heavy or soft lifts, regardless of rocks, is accomplished with fewer passes and with greater efficiency than by any other tamping method. A major design feature is in the individual weight boxes and wheels: each assembly is mounted independently for full vertical oscillation, providing a constant wheel load no matter what the terrain. Bridging or load shifting is eliminated, and the Yuba-Southwest Multiple-Box Roller rides slopes smoothly with greatest possible stability.

You get up to three times as much tire life, too, over single box type rollers with their limited oscillation. Costly overwear and frequent blowouts are a thing of the past.

Why not get full information on this outstanding, money-saving equipment today. Choose from five models: 10 to 100 tons rated capacity. Adaptable to any job. Assembled in any combination of 3 to 6 boxes with flanged yoke.

Yuba-Southwest also manufactures
SEMI-TRAILER SPRINKLER TANKS
SELF-PROPELLED ROLLERS
SHEEPSFOOT ROLLERS

Sold and Serviced by Your Caterpillar Dealer

YUBA

specialists in compaction equipment

SOUTHWEST WELDING & MANUFACTURING DIVISION
3201 W. Mission Road, Alhambra, California
YUBA CONSOLIDATED INDUSTRIES, INC.

For more facts, use Request Card at page 18 and circle No. 266

Prestressed beam forms permit easy stripping

The new football stadium und[illegible] construction at Indiana University [illegible] Bloomington, Ind., is designed [illegible] make wide use of prestressed concre[illegible] in its construction. Thirty-three hu[illegible] dred prestressed-concrete chann[illegible] beams will form the seats and wal[illegible] ways of the towering curved gran[illegible] stand with a capacity for 73,000 fa[illegible]

The channels, ranging from 18 [illegible] 28 feet in length and weighing fro[illegible] one to two tons each, were cast [illegible] Form-Crete all-steel forms manufa[illegible] tured by the Food Machinery [illegible] Chemical Corp.

Especially designed to simplify th[illegible] stripping of these shapes, the form[illegible] are equipped with a form-lock devi[illegible] that, when engaged, places the sid[illegible] of the form in a perpendicular pos[illegible] tion ready for concrete placemen[illegible] After curing, the form locks are re[illegible] leased, and the natural flexing of th[illegible] metal at the base of the stem allow[illegible] the side of the form to pull awa[illegible] from the concrete sufficiently to a[illegible] low easy stripping.

For further information write to th[illegible] Food Machinery & Chemical Corp[illegible] Dept. C&E, P. O. Box 1718, Lakelan[illegible] Fla., or use the Request Card that [illegible] bound in at page 18 of this issu[illegible] Circle No. 102.

Concrete saw speeds production, saves labor

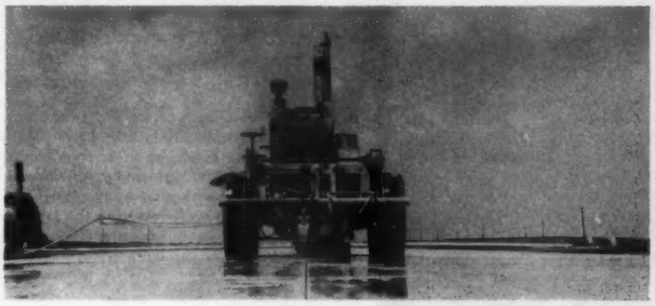
The Clipper Mfg. Co.'s automat[illegible] cally operated longitudinal concre[illegible] saw, featuring two independently co[illegible] trolled cutting heads, recently aid[illegible] the Northern Improvement Co. [illegible] North Dakota in finishing a 12-mi[illegible] segment of divided highway da[illegible] ahead of schedule.

The $2½ million project include[illegible] a strip of concrete highway 6 mil[illegible] east and 6 miles west of Tappa[illegible]

N. Dak. The double-lane project totaled 24 miles of highway, 24 feet wide and 10 inches thick. The contract also included finished shoulders of 3-inch blacktop extending 6 feet on the inside lane and 10 feet on the outside lane.

The Clipper 56-hp Model C-560 sawed all longitudinal joints in the well cured, critical aggregate within 3 to 7 days after concrete placement. The saw was able to cut 3,570 feet at a 2½-inch depth in an 8½-hour day, which was more than enough to keep ahead of the paving operation of approximately 3,000 feet per day at a saving in labor cost.

For further information write to the Clipper Mfg. Co., Dept. C&E, 2800 Warwick, Kansas City 8, Mo., or use the Request Card at page 18. Circle No. 108.



Only two workers were required to handle the longitudinal sawing, and the automatic operation of the Clipper C-560 assured a constant rate of production averaging more than 420 feet per hour.

Ore-aggregate topping protects pit floor

One of the problems facing the designers of large municipal incinerators is the intense impact and abrasion to which pit bottoms and sides are subjected.

In Cleveland's new plant, Anvil-Top, an all-iron-aggregate concrete topping manufactured by the Master Builders Co., covers the entire pit-floor surface. Applied to the pit floor after the normal concrete had set, Anvil-Top was placed monolithically in a ¾-inch thickness.

Construction of the pit floor was, at best, a tricky operation, due to problems concerning temperature, accessibility, and material handling.

With temperatures running extremely low at the pit bottom, concrete placing of the floor was scheduled for mid-June. Concreting and iron topping for the 3,200-square-foot floor was a 3-day operation, with the floor laid out checkerboard fashion in three equal sections. One section was placed each day, the center section last.

When the concrete was ready for the Anvil-Top, 1×4's were placed over the concrete surface as screed guides, enabling workers to follow the pitch of the floor from the sides to the center of the pit bottom. By means of an erecting crane, Anvil-Top was lowered into the pit, 400 pounds at a time, in wheelbarrows; rough-raked to ⅜ inch above final level; then compacted with grill tamps. Magnesium scrapers were used to cut the Anvil-Top to final level. Placing and final finishing of the Anvil-Top for the first day's portion was accomplished in a little less than 7 hours.

According to the manufacturer, Anvil-Top will provide Cleveland's new incinerator with protection equivalent to 1-inch-thick steel plate (at a cost reduction of roughly 40 per cent) and an impact and abrasion resistance up to six times greater than that of normal concrete.

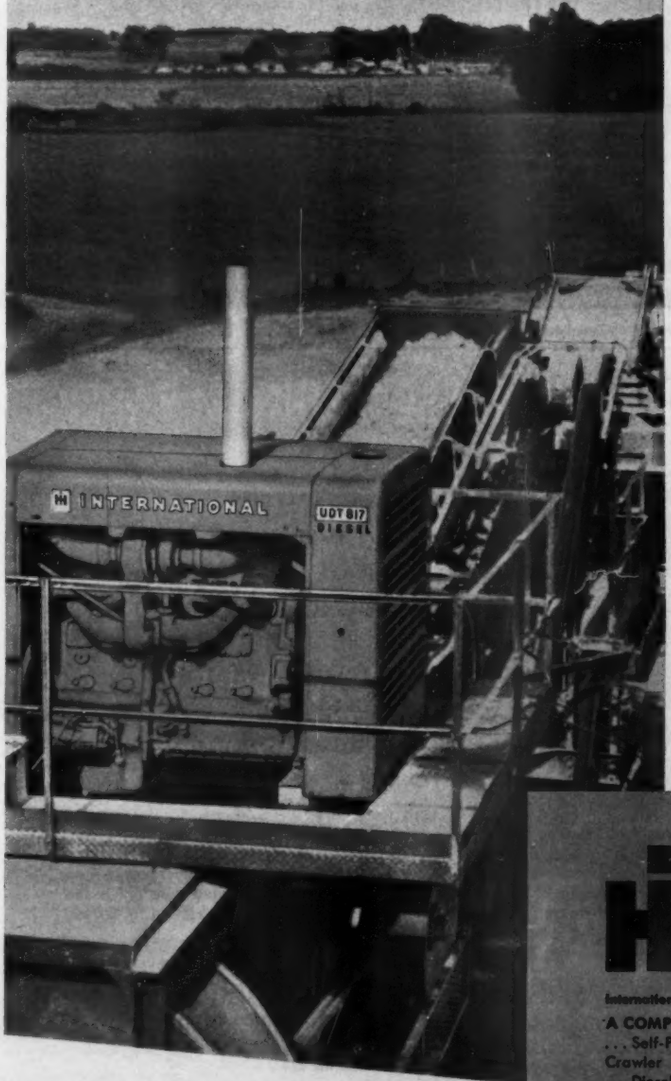
For further information write to the Master Builders Co., Dept. C&E, 7016 Euclid Ave., Cleveland 3, Ohio, or use the Request Card at page 18. Circle No. 83.

For more facts, circle No. 267→

IH power

cuts cost-per-ton for road base material

"Only way we could make a profit on this job was to increase crushing volume, so we bought a new International UDT-817"



Reports Co-owner Eugene Nelson, of Madison Stone Construction Co. "When we contracted to supply Wisconsin's new Highway 49 with 50,000 tons of crushed rock at $1.56 per ton, we knew our profits would depend on continuous high production. For this we turned to International power. We aimed at a production rate of 180 tons per hour, but have been able to load a 15-ton truck every four minutes, or well over 200 tons per hour! Specifications called for crushing the hard Niagara limestone to one inch. We needed more power, but wanted a smaller unit, and this turbocharged International fills the bill."

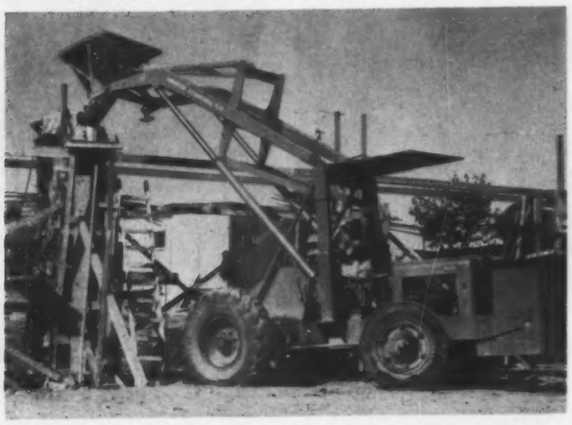
When rising costs put you in a bind, contact your IH Engine distributor or dealer, and back up your bid with low-cost, dependable International power. Choose from 24 well-spaced models from 16.8 to 385 maximum horsepower—the fastest payback power.

INTERNATIONAL IH ENGINES

International Harvester Co., 180 North Michigan Ave., Chicago 1, Ill.

A COMPLETE POWER PACKAGE: Crawler and Wheel Tractors . . . Self-Propelled Scrapers and Bottom Dump Wagons . . . Crawler and Rubber-Tired Loaders . . . Off-Highway Haulers . . . Diesel and Carbureted Engines . . . Motor Trucks . . . Farm Tractors and Equipment.

For more facts on Insert, circle No. 270.



A saving in labor costs of $234 over a 5-day period is attributed to the use of an American Econmobile by the Mellon-Stuart Co., a Pittsburgh construction firm. Employed in a tough concrete-placing situation calling for an exceptionally high and long reach in the construction of truss piers for a Pittsburgh church, the machine reportedly eliminated the need for at least two laborers on the job. For further information write to the **American Road Equipment Co.**, Dept. C&E, 4201 N. 26th St., Omaha 11, Neb., or use the Request Card at page 18. Circle No. 105.

LOW COST...EASY OPERATION

Rivinius

LIVE POWER STEERING

for CAT D8 Tractors

(prior to 14A models)

SAVES MAN-POWER: Operator fatigue goes down... performance goes up! Finger tip control Live Power Steering provides closer, faster control of D8 power and maneuverability.

SAVES CLUTCHES: No wasteful slippage and clutch wear...on each turn the clutches are engaged smoothly into complete seizure.

SAVES TIME: Levers move only 1½" and return automatically when released. Operators report they can operate a D8 one, sometimes two speeds faster with Rivinius Live Power Steering.

SAVES DOLLARS: This new Rivinius system is compact, easy to install on D8's in the field...consists of hydraulic cylinder, valve, pump, reservoir, brackets and hardware.

See your Caterpillar dealer now...or write:

Rivinius, Inc.

EUREKA, ILLINOIS

For Caterpillar Motor Graders: Torque Steering Booster ...Hydraulic Moldboard Shift...Snow Blower...Snow Loader

For Caterpillar D8 Tractors: Live Power Steering

For more facts, use Request Card at page 18 and circle No. 268

THE NEW HANCOCK ELEVATING SCRAPER

(Shown on John Deere 840 Tractor)

FORCED EJECTION • LARGER TIRES • NEW DRIVE

HEAVIER • MORE CAPACITY

Take advantage of these new features that are time and money savers for you! Forced ejection saves you operating time and manpower by providing a positive — controlled dump. Larger tires make the heavier, improved scraper more maneuverable. New, improved drive means heavier loads with less horsepower than ever before . . . 7½ yard and larger capacities. The new Hancock Scraper can be pulled with either the 830 or 730 John Deere, or similar industrial tractor, with front wheel dolly; or by direct connection to tractor. For "Engineered" help with your earth moving problems, contact Hancock today!

HANCOCK MANUFACTURING COMPANY

PO 3-8297 P. O. BOX 1359 LUBBOCK, TEXAS

For more facts, use Request Card at page 18 and circle No. 269

Seismograph saves money in subsurface survey

Using a portable seismograph to obtain subsurface rock information, Ellerbe & Co., a contracting firm in St. Paul, Minn., accurately chose a route without rock for over 7 miles of highway along Minnesota's rock-hewn North Shore of Lake Superior.

The firm, unable to use power augers due to the inaccessibility of

the area, and thwarted in hand auger attempts due to large boulders, found preliminary survey efforts bogged down until it employed the Geophysical Specialties Model MD-1 seismograph. With this instrument, rapid traverses were run on all alternate routes, and complete subsurface rock information was obtained for choosing accurately both the horizontal and vertical route without borings.

Completion of the survey required 2 men for 2 weeks at a cost of $2,000. Estimates for conventional methods on this job originally called for 3 men for one to two months at three times the cost.

Write to the Geophysical Specialties Co., Dept. C&E, 15409 Robinwood Drive, Hopkins, Minn., or use the Request Card at page 18. Circle No. 134.

Tractor shovel shuttles between two gravel pits

When it became necessary for the Clarence Sand & Gravel Co., of Clarence, N. Y., to open a new pit 9 miles from the main one, it was decided to let a Trojan Model 304 rubber-tire tractor shovel handle the job of stripping the overburden.

The main reason for this choice was that the rig was also needed at the main pit to assist in loading operations. Since the tractor shovel

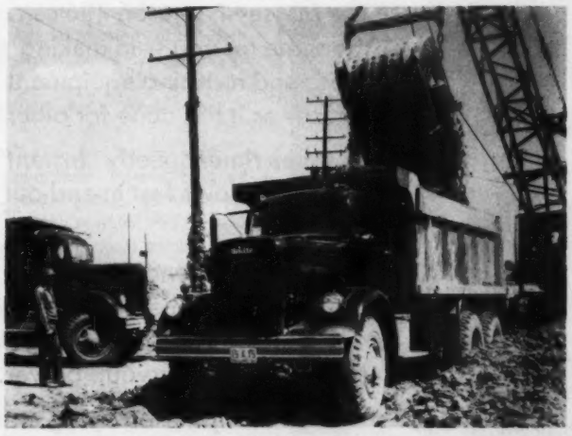
could negotiate the distance between the two pits under its own power, its top speed being 23 mph, the Trojan was considered the ideal equipment for the two jobs.

Working in areas measuring approximately 40×25 yards the Trojan stripped from 18 to 24 inches of overburden, taking off 7 inches at a pass.

When the new pit is finally opened and in production, this same Trojan 304 will handle all tractor-shovel loading operations. Until that time, the tractor shovel loads rear-dump trucks with gravel at the main pit. Each time the rig goes into a bank, the operator is able to heap considerably more material in the bucket than the 3-yard rated capacity. The tractor shovel's power enables the operator to constantly crowd the bank until he has secured the maximum amount of gravel. In this way, the machine is able to load 10-yard rear-dump trucks with almost 12 yards of bank run in only 3 passes.

For further information write to the Yale & Towne Mfg. Co., Trojan Division, Dept. C&E, Clinton St., Batavia, N. Y., or use the Request Card that is bound in at page 18 of this issue. Circle No. 56.

The Clarence Sand & Gravel Co. uses a 3-cubic-yard Trojan Model 304 tractor shovel to load a 10-yard rear-dump truck with bank-run gravel.



Excavation for the Columbus, Ohio, North Freeway presents some challenging terrain problems to Visintine & Co., Inc., and Complete General Construction Co., Inc., but they are keeping pace on the $3.5 million freeway contract with dawn-to-dark operations in dirt and rock removal. Ten White 9064 trucks like the two shown here, equipped with 14-foot dump bodies with full cab shield, operate continuously over the rut-ridden area. The trucks, with 173-inch wheelbase, are providing top payloads and maneuverability with a minimum of downtime. For further information write to **The White Motor Co.**, Dept. C&E, P. O. Box 5757, Cleveland, Ohio, or use the Request Card at page 18. Circle No. 104.

HERE'S A PROFITABLE WAY TO

KEEP SEVERAL PROJECTS GOING AT ONCE...*

by shifting welding equipment on a moments notice

*Six 300 amp. Hobart welders, converted to operate on L.P. gas, and mounted on a trailer bed, radically increased construction speeds and mobility for this alert contractor. The rig is taken from one job to another on a moment's notice. Operating expenses, costly delays and setup time are minimized. **Hobart welders have a way of profitably fitting into unusual jobs as well as every day applications.** A wide variety of gas and electric drive welders and models with auxiliary power allow you to pick the ideal unit for your work. We'd like to be helpful in giving you ideas—no obligation of course. **HOBART BROTHERS CO., BOX 810, TROY, OHIO. Ph. FE-21223.** *Manufacturers of the World's Most Complete Line of Arc Welding Equipment"*

USE THE COUPON...No Obligation

● HOBART BROTHERS CO., BOX 810, TROY, OHIO

Yes, I'd like to know more about Hobart Welders. Send me more details on the ☐ Standard Hobart Gas Drive Welder ☐ Standard Hobart Gas Drive Welder with auxiliary power ☐ "PowerWeld" ☐ "Husky Boy."

Name_____

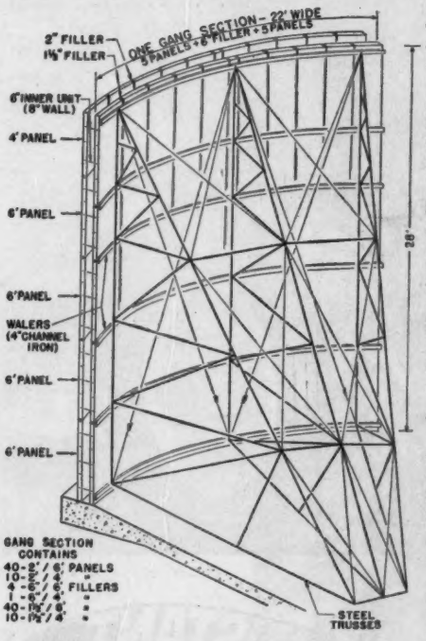
Address_____

City_____ Zone____ State_____

For more facts, use coupon or Request Card at page 18 and circle No. 272

New use for Symons Steel-Plys in gang forming...

28' CIRCULAR WALLS GANGED FOR SEWAGE PLANT



2,300 square feet of forms on inside ganged section stripped and reset by crane in 3½ hours.

8 men in less than 8 hours erected 2,300 square feet of forms and scaffolding on outside plus pouring the concrete.

Friebel & Hartman, Shelby, Ohio contractor ganged Symons Steel-Ply Forms on the Mansfield, Ohio Sewage Treatment Plant. The project consisted of four digestors, each 80 feet in diameter and 28 feet in height and 8 inches thick with no horizontal joints.

4 Ton Sections

Four ganged sections were used—each 22 feet wide and 28 feet high. This allowed pouring ⅓ of a tank at a time. Each ganged unit consisted of four rows of 6' Symons Forms and one row of 4' forms to make the 28' height. Three trusses were used to brace each ganged section. A ¼ yard Lorain with an 80' boom handled the sections.

One Pour Every 4 Working Days

What is the Friebel & Hartman verdict on using this method of pouring: "Ganged forming enabled us to place our concrete efficiently and vibrate properly, held bracing costs to a minimum, allowed us one pour every four working days and gave us some very low erection costs."

Complete story on the Ohio Sewage Treatment Plant will be sent FREE upon request. Symons Forms may be rented with purchase option.

Symons CLAMP & MFG. CO.

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Warehouses throughout the U.S.A.

MORE **SAVINGS** FROM **SYMONS**

For more facts, use Request Card at page 18 and circle No. 273

on saving money at every turn of the road...

the MASSEY-FERGUSON 406 TRACTOR SHOVEL *speaks for itself:*

"HAVE DONE... CAN DO!"

The Massey-Ferguson 406 can do the same for you — in making a profit and reducing equipment costs — as it has done for others!

Saves time! Speedy *"Instant Reverse"* allows fast in-and-out maneuvering.

Full loads! Handles 1 cu. yd. (SAE rated) with ease because of direct thrust from low pivot points and 9300 lbs. pryout power.

High dump! Telescoping arms clear 126" at hinge point.

Maximum visibility! Operator is positioned to see front, rear, and both sides for maximum efficiency and safety.

More jobs! Handles both big and little at a profit. Numerous attachments — including famous Massey-Ferguson Backhoe — give low-cost versatility.

Costs less to own! Compare and you'll see!

featuring **INSTANT REVERSE** with **TORQUE CONVERTER**

Go Forward or Back... at a Touch of your Toe!

NO SHIFTING...NO CLUTCHING...NO LEVERS TO PULL

Instant Reverse is found only in Massey-Ferguson Industrial Equipment. Just press one foot pedal to go forward . . . switch to another to go reverse. Acceleration is built in each pedal. Has five different speeds — equal in each direction so you can pre-select proper gear range for each job. A demonstration will quickly show you its many advantages.

Why Wait? — Set a Date — We'll Demonstrate!

MASSEY-FERGUSON INDUSTRIAL DIVISION

Block 1000 South West St., Wichita 13, Kansas

Producing Sizeable Power for the "Sensational 60's"

MF 60-4

For more facts, use Request Card at page 18 and circle No. 274

Permitting contractors to easily load and unload machines such as pavers, ditchers, big shovels, scrapers, and crawlers, LaCrosse removable gooseneck trailers utilize fifth-wheel hookup at both ends of the gooseneck and a positive locking arrangement. This eliminates the need for winch, power, or hydraulic attachments. In operation, the tractor kingpin connection is released and the trailer lowers to the ground as the tractor pulls away. Hinged stirrups on the gooseneck are rotated to "up" position and the tractor is backed up, locking gooseneck to the tractor fifth wheel. The kingpin on the trailer is then released, and the tractor pulls away with the gooseneck. The gooseneck is never free to swing or drop, being always attached either to tractor or trailer. The machinery is then quickly loaded from the front. For further information write to the **LaCrosse Trailer Corp.**, Dept. C&E, 418 Gould St., LaCrosse, Wis., or use the Request Card at page 18. Circle No. 116.

Proceedings of HRB's annual meeting in 1959

■ The "Proceedings of the Thirty-Eighth Annual Meeting" of the Highway Research Board is available for $10 from HRB headquarters at 2101 Constitution Ave., Washington 25, D. C.

Material covered by the book includes economics, finance, and administration; design; materials and construction; maintenance; traffic and operations; soils, geology, and foundations; and a summation. The book also contains a list of HRB 1959 publications and a list of member organizations, committees, special departments.

Concut forms division

■ Concut Sales, Inc., El Monte, Calif., has formed a new division, Concut Industrial Products. The division will make a chlorinated rubber product for curing, sealing, and hardening concrete in one application. Headquarters for the new division will be with the parent firm.

ESCO names managers in San Francisco area

■ Electric Steel Foundry Co., Portland, Ore., has appointed Halle P. Robb manager of sales for all ESCO products in northern California, Nevada, and Utah. He continues as manager of Pacific area sales for the International Division.

W. R. Rice, new manager of sales of mill products, will direct the entire sales effort in the San Francisco area for stainless steel and plastic materials and products for which ESCO is a distributor.

Don Erickson, sales representative, returns as office manager of ESCO-San Francisco. Karl Moore, interim office manager, will become a sales representative.

Waukesha re-elects

■ The board of directors of Waukesha Motor Co., Waukesha, Wis., has re-elected J. E. DeLong, president; C. E. Nelson, Jr., executive vice president; J. G. Swain, vice president of sales; N. H. Willis, vice president of engineering; L. W. Youker, secretary and treasurer; and J. J. Kleinbrook, assistant secretary and assistant treasurer.

For more facts, circle No. 275→

THE 1-YARD WORKHORSE OF THE LORAIN LINE HAS BEEN RE-SHOD

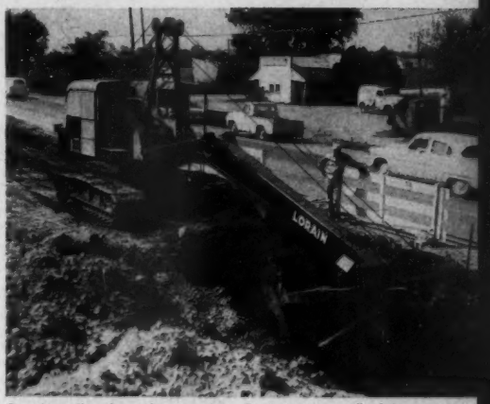
A new bigger crawler under the Lorain-50 gives still better footing, a more stable base whether used as an excavator or crane. Always a tough digging machine as shovel or hoe, the new "50" can even better its fast high production performance.

25-ton capacity as crane. The increased crawler size gives increased crane capacities too. 14′ long by 11′ wide, it provides real stability, and Lorain's square-tubular-chord boom is lighter, stronger, gives longer reaches.

More work done with "Joy-Stick" controls. Regardless of the front end used, 2-lever, "Joy-Stick" air controls make it easier for the operator to get increased production. Each lever controls single or combined operations. "Metered air" valves retain normal feel of the machine. There is no easier way to get the job done.

You will want to get the full story on this improved machine. Why not see your nearby Lorain distributor today.

THE THEW SHOVEL COMPANY, LORAIN, OHIO



One hoe digs four size trenches. Buckets are easily interchanged on the Lorain-50 hoe so that it can dig trenches 36", 40", 44" or 48" wide. 19-ft. or 23-ft. boom available.

LORAIN®
ON THE MOVE

PLANTS in Lorain, Elyria and Bucyrus, Ohio.

PRODUCTS—Power shovels, cranes, draglines, clamshells, and hoes on crawler mountings from ⅜- to 2½-yard capacity · Cranes from 7 to 80 tons . . . on crawlers, and as rubber-tire Moto-Cranes, and Self-Propelled Cranes · Rubber tire front-end Moto-Loaders in 1¾- and 2-yard models.

OUTLETS—Lorain products sold and serviced by 249 distributor outlets throughout the world.

Hot-mix for resurfacing a state route between Monroe and Brodhead in southern Wisconsin is turned out in 8,000-pound batches in a 45-second cycle by a Standard Model R-M plant. The capacity of the plant, ordinarily 330 tons per hour maximum, was reduced to from 200 to 225 tph because of difficulty in drying the material.

At the cold end of the plant, a P&H 655 crane with Owen 1½-yard bucket swings crushed gravel from the stockpile to the single receiving bin. The material goes through a control gate onto a conveyor belt leading to a reciprocating feeder, then into the dryer.

Equipment rolls out blacktop at good pace

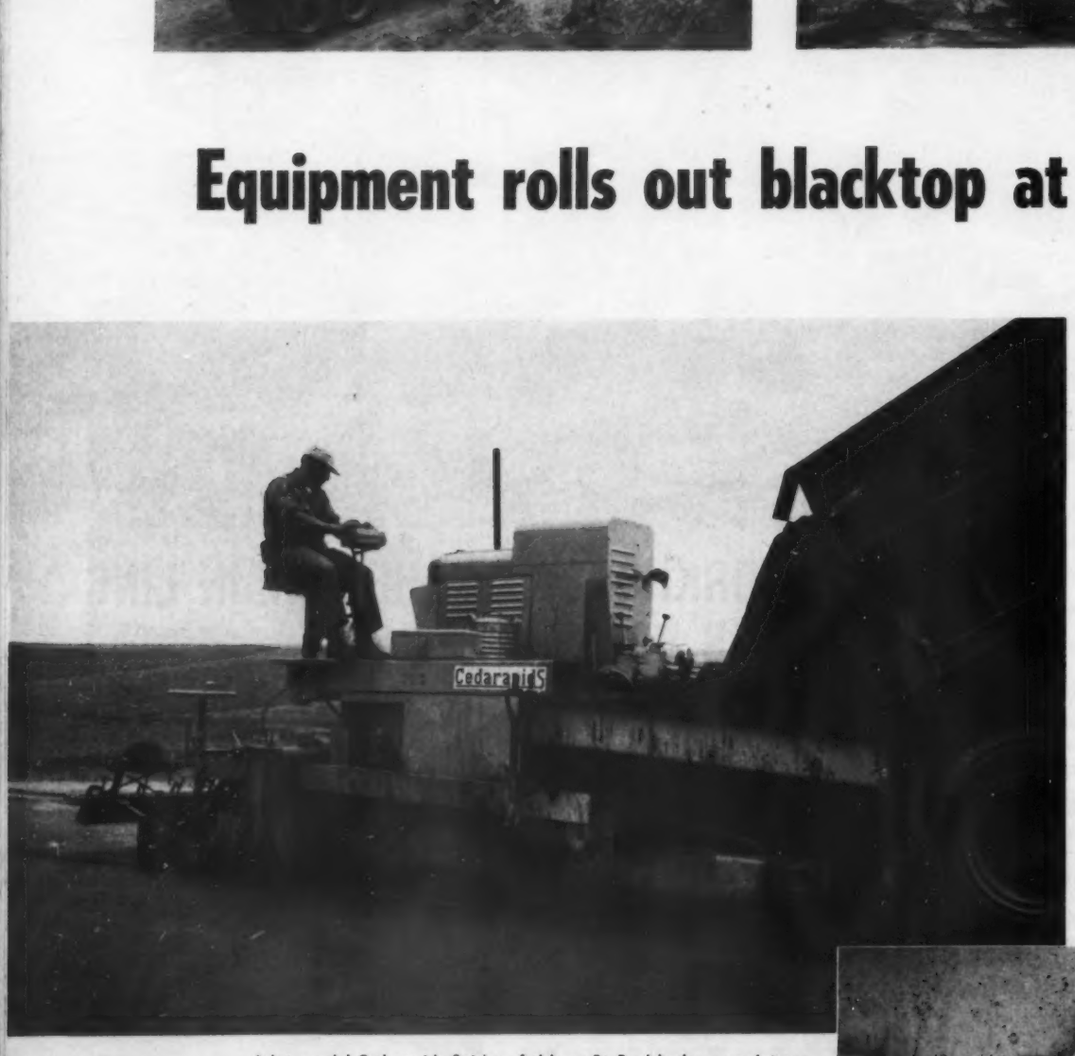
by BILL ALLEN, field editor

Modern equipment run by hard-working crews put down hot-mix at a good clip on a resurfacing job in southern Wisconsin.

The contractor's new 8,000-pound Standard batch plant allowed the crews to put down some two miles of binder course on each lane per day. Their electrically controlled Cedarapids finishing machine did a good job of taking the bumps out of the rough concrete pavement.

Rein, Schultz & Dahl, Inc., Madison, Wis., the general contractor, had a tough job. The original highway, built in 1926, was badly broken up. The combination of heavy axle loads and inadequate subbase had produced both longitudinal and transverse cracking over the years.

In places, it was necessary to remove broken-up portions of the con-



A late-model Cedarapids finisher, fed by a St. Paul body on an International truck, has electric controls to engage the track clutches, start and stop auger feed, and turn on the screed's electric vibrators. Screed height is controlled by hand screws on both sides. The wire broom attachment at rear, required by state spex, brings fines to the top and provides a tightly knit surface. An electric "telltale" device, right, mounted above each auger assures an even flow of hot-mix to the screed. The device turns an auger off when material builds up too high; it turns an auger on again when the hot-mix gets too low.

(Additional photo on front cover)

crete and refill the area with asphalt. Along some stretches, a layer of 6 inches of gravel was placed on top of the old concrete. The road was later paved with two courses of asphalt and feathered down at the ends to meet the grade.

The contract on State Highway 11 between Monroe and Brodhead contained pavement widths of 18, 20, and 24 feet. The 18-foot pavement was widened to 20 feet by the addition of 1-foot-wide asphalt strips on both sides. The wider stretches of highway, 20 and 24 feet, were held at their original width. About 32,000 tons of bituminous concrete was required for the 2-course surfacing and widening on the 13.4 miles of the contract.

Big batch plant

The contractor's big batch plant was set up in an aggregate-producing pit near one end of the job. The Standard Model R-M asphalt plant dropped 8,000-pound batches in a 45-second cycle to the waiting dump trucks. Its maximum capacity of 330 tph was reduced to 200 to 225 by the difficulty in drying the material.

At the cold end of the plant, a P&H 655 crane with an Owen 1½-yard bucket swung the crushed gravel from the stockpile to the single receiving bin. The material, aided by electric bin vibrators, passed through a gate-controlled opening to a 30-inch conveyor belt. It was then carried to a reciprocating feeder at the mouth of the Cedarapids 88-inch-diameter dryer. From the dryer, the material was elevated to the hot screens, where it was split into three sizes. Electric air controls were used as the batches were weighed out and dropped to the 80-cubic-foot pugmill. The temperature of the designed mix at discharge from the pugmill was 305 degrees F, with a tolerance of 20 degrees plus or minus by state specifications.

Power to operate the all-electric plant was supplied by two Murphy 107-kw diesel-powered generators. A Cleaver-Brooks hot-oil heating system heated the asphalt for the plant. Dust collectors kept the dust rising from the plant at a minimum.

Special dump bodies

Both tandem and single-axle dump trucks were used to haul the hot-mix. Most of the bodies were equipped with special plates for guiding the asphalt into the finishing machine. One plate extended the bottom of the body about a foot beyond the tail gate. Two other plates, welded diagonally across the rear corners of the body, helped funnel the material into the finishing machine.

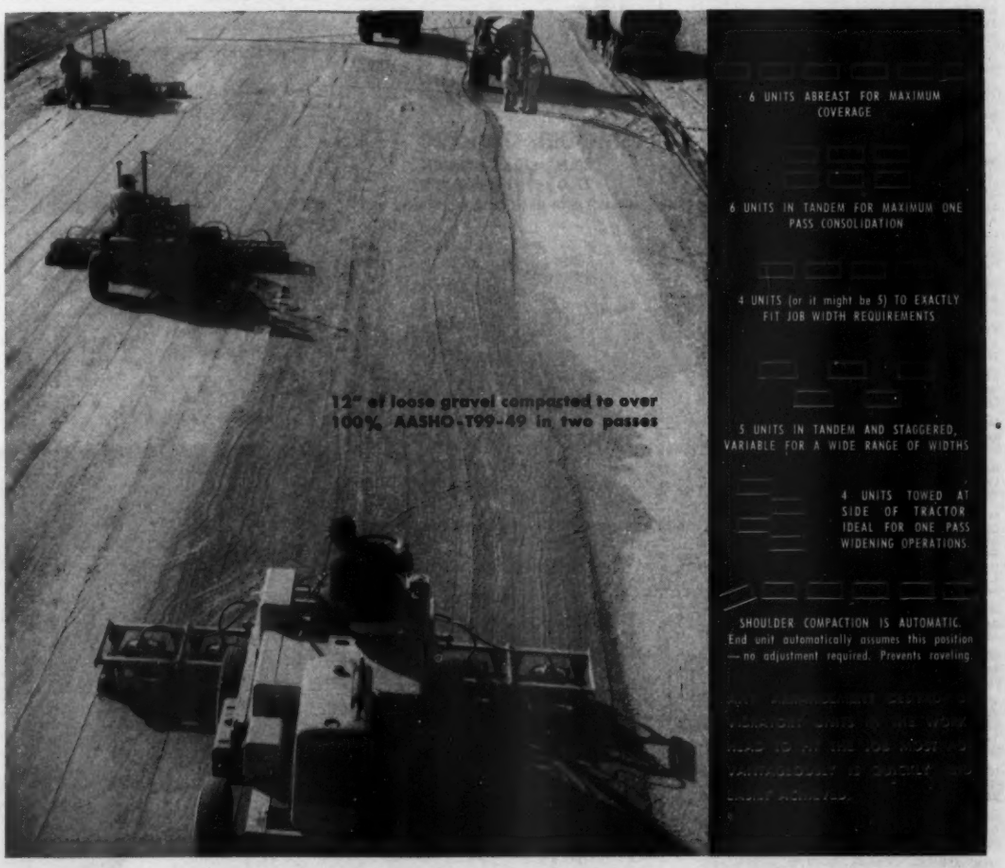
Generally, the trucks hauled alternate loads to the two finishing machines on the roadway. The two spreads of equipment operated about a mile apart, each laying half the width of the road. Each finishing machine was followed by two rollers.

Electric controls

The superintendent was particularly pleased with the performance of the company's new Cedarapids finishing machine. It put out a smooth

(*Continued on next page*)

This Buffalo-Springfield 8 to 12-ton tandem roller is one of a pair following the finishing machine to put the squeeze on the hot asphaltic concrete. The roller is equipped with a General Electric 2-way radio for communicating with the plant or superintendent.


12" of loose gravel compacted to over 100% AASHO-T99-49 in two passes
6 UNITS ABREAST FOR MAXIMUM COVERAGE
6 UNITS IN TANDEM FOR MAXIMUM ONE PASS CONSOLIDATION
4 UNITS (or it might be 5) TO EXACTLY FIT JOB WIDTH REQUIREMENTS
5 UNITS IN TANDEM AND STAGGERED, VARIABLE FOR A WIDE RANGE OF WIDTHS
4 UNITS TOWED AT SIDE OF TRACTOR IDEAL FOR ONE PASS WIDENING OPERATIONS
SHOULDER COMPACTION IS AUTOMATIC. End unit automatically assumes this position — no adjustment required. Prevents raveling.

JACKSON COMPACTORS

MORE OF THEM USED ON AMERICAN TURNPIKE PROJECTS THAN ALL OTHER PAN-TYPE COMPACTORS COMBINED!

The reason is two-fold. 1. The JACKSON, with its tremendously powerful vibratory action, provides 100% of specified density of any material normally used in macadam base or sub-base courses in the shortest possible time. Each unit in the workhead supplies 4200 THREE-TON BLOWS per minute. 2. IT'S FAR MORE VERSATILE THAN ANY OTHER COMPACTOR, ideally adjustable to each and every job requirement. Coverage is what you want it to be, up to 13', 3". Any arrangement of the compactor units, as indicated at right, is quickly attainable. With this machine you can compact areas others can't touch, a factor that eliminates lost motion and saves a great deal of time and money. And, of course, it is equally effective on all types of granular soil fills and similar projects. By all means inspect it at your Jackson distributor.

[illegible] may be pushed or pulled by any prime mover capable of working speeds as low as 50 FPM; towed to location at any road speed; operated in either direction; controlled by prime mover operator. Two workheads, with as many as 4 units each may be employed, one ahead and one following trailer. Power plant supplies both single and 3-phase 110-115 volt, 60 cycle A.C. and has many uses.

FOR SALE OR RENT AT YOUR JACKSON DISTRIBUTOR
— name and descriptive literature sent on request.

JACKSON VIBRATORS, INC.
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For more facts, use Request Card at page 18 and circle No. 276

(*Continued from preceding page*)

road, and it was convenient to operate and maintain.

The electric controls simplify the operation of the machine. The operator sits at a control box and flicks switches to engage the track clutches, to start and stop the auger feed, and to turn on the Syntron electric vibrators on the screed.

Normally, the flow of asphalt is regulated automatically by a "tell-tale" device mounted above each auger. When the material builds up too high, it activates a switch that stops the rotation of the auger. When the material gets too low, the auger is automatically turned on again. This assures an even flow of material to the screed.

The four Syntron electric vibrators on the screed give the bituminous concrete adequate initial compaction. The height of the screed is controlled on both sides by hand screws.

Wire broom on finisher

To comply with state specifications, the contractor attached a wire broom to the rear of the finishing machine. This tended to scrape the fines to the top and give a very tight-knit surface to the finish course.

The finishing machines laid down a 1¾-inch binder course topped with a 1¼-inch surface course. No tack coat was applied to either the concrete or the binder course.

A good communications setup helped coordinate the work of the two paving crews and the plant. General Electric two-way radios were located at the plant, in the superintendent's car, the road foreman's pickup, and on one of the rollers.

Fred Sperle headed the job for Rein, Schultz & Dahl. Edgar Temby was the resident engineer for the Wisconsin State Highway Department.

THE END

Government relations in state highway laws

■ Highway Research Board Special Report 49, "Intergovernmental Relations in State Highway Legislation: An Analysis", may be purchased for $3.20.

The report contains data on legislation of general application; cooperation in providing for highway facilities; and legislation applying to specific highway activities. A summary of state statutes is included.

The report is available from the HRB, 2101 Constitution Ave., Washington 25, D. C.

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35-TON LOAD CAPACITY

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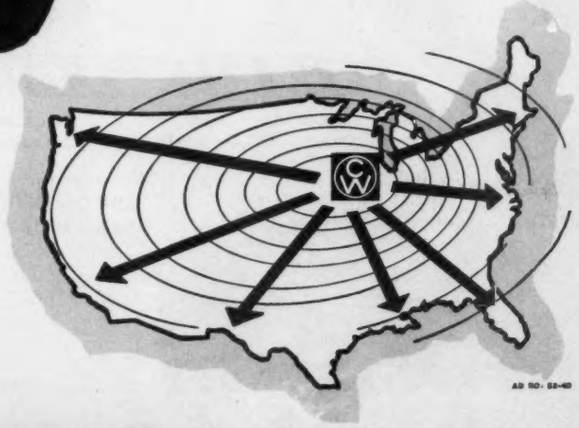
CABLE CONTROL
for standard tractors in
every horsepower rang

BASE COURSE COMPACTION is being done by a Jackson vibratory compactor, working ahead of an International tractor with Vibro-Plus vibrating roller, at Glasgow Air Force Base, Glasgow, Mont. Because of the deep frost penetration in this region, runway, taxiway, and apron sections have an over-all depth of 44 to 52 inches of paving, base, and subbase.

SAHEAD

ONY EARTHMOVING JOB ...The Curtiss-Wright Line

Let's skip the details and get down to basic facts about earthmovers. If you move more dirt, you make more money — it's as simple as that . . . and just about as easy, too, with the modern Curtiss-Wright line. C-W design features for high performance, easy operation and low maintenance put you yards ahead in production — dollars ahead in profit on any earthmoving job. Call your Curtiss-Wright distributor for complete information and specs on the machine performance matched to your job requirements.



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SOUTH BEND DIVISION
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Engineer, geologist form consulting partnership

■ J. David Welch and Martin Malinofsky have formed a partnership for the practice of consulting engineering and geology. Welch & Malinofsky will maintain offices at 382 Springfield Ave., Summit, N. J.

The firm will specialize in soils and foundation analysis, geologic investigations, materials research and development, and natural resources development. Other services offered include aerial-photo interpretation, aerial-photo mosaics, terrain models, testing, analysis, reports, designs, and supervision of construction.

Both men were formerly with Howard, Needles, Tammen & Bergendoff, New York City and Kansas City consulting engineers. Welch was chief soils engineer and Malinofsky, engineering geologist.

Photogrammetry is topic of new HRB bulletin

■ Six papers on "Photogrammetry: Developments and Applications, 1959" are contained in Highway Research Board Bulletin 228. Under discussion are North Dakota's use of aerial inventory for county general highway maps; a photogrammetric approach to highway route location and reconnaissance; and an adjustment of photogrammetric surveys.

Concluding papers develop the relationship of topographic relief, flight height, and minimum and maximum overlap; and terrain data for earthwork quantities. Maps, tables, and graphs supplement the written material.

Priced at $1.20, the bulletin may be purchased from HRB headquarters, 2101 Constitution Ave., Washington 25, D. C.

Owen Bucket news

■ The Owen Bucket Co., Cleveland, has appointed Frank P. D'Anci manager of distributor sales for Clamshell Bucket Sales Corp., 149 Broadway, New York City. Owen Bucket has opened a new warehouse and repair service center at Maspeth, N. Y.

The new department will stock Owen parts and buckets, and repair and rebuild clamshell buckets and grapples.

Convention Calendar—Page 75

←For more facts, circle No. 277

Tricks of the Trade

Power spray used to clean sticky asphalt from truck bodies

The driver doesn't waste any time cleaning the sticky asphalt from the Galion body of this GMC dump truck. He applies the diesel fuel with a power spray usually used by farmers to spray weeds.

The long arm attached to the nozzle allows him to reach all parts of the dump body. An electric-powered pump supplies the pressure to the Fargo sprayer, which is made by Fargo Foundry Co., Fargo, N. Dak.

This truck was hauling hot-mix for P. A. Bradbury Construction Co., Aberdeen, S. Dak., on a 17-mile project on U. S. 218 north of Aberdeen.

Water from garden hose keeps heavy wheel loads from marking asphalt floor

A new asphaltic-concrete floor, a hot day, and heavy wheel loads is a combination that could have resulted in some permanent indentations in the floor or a parking garage. But a superintendent, alert to the possibility, put this water-cooling system to work before the arrival of the heavy trucks.

The parking garage was being built in a congested area of downtown Ogden, Utah, by general contractor Mark B. Garff, Ryberg & Garff Construction Co., Salt Lake City. Concrete walls and columns were cast in place to support the precast second deck of the structure. Then the asphaltic-concrete grade slab was placed. This floor, like the rest of the structure, is designed for relatively light passenger-car loadings.

The main girders of the precast second deck are typical prestressed-concrete AASHO bridge girders with

a span of 64 feet. They were fabricated in Salt Lake City by Utah Sand & Gravel Products Corp., Prestressed Concrete Division, and trucked to the job site in Ogden.

The truck-trailers, with their 18-ton girders, constituted a fairly heavy wheel loading. This load had to be be pulled in on the asphalt floor and left while a crane made arrangements to pick the girder off the truck and hoist it into place.

A combination of high air temperature and a bright sun left the newly laid asphaltic floor too soft to support this load without possible marking of the surface. Such marks would make the floor difficult to clean as well as detract from its appearance.

Superintendent Blaine Glanville started applying cooling water even before the trucks arrived. A workman with a garden hose applied the water to the floor, letting the runoff go down the drain. When the trucks arrived, the water was directed especially to the area immediately ahead of the wheels and the area on which the wheels would stand.

During the time that the girders and other members were being unloaded and set in place, the water was applied continuously to the area around the wheels. As a result, the floor remained smooth and unmarked.

For any job . . . anywhere

"Faster-from-Foster" rental piling is safer, costs less

It's safer to rent steel-sheet piling from Foster, because you always get the exact sections and lengths the job needs. There's no risk of making do with substitute lengths. And, your only cost is a low rental rate directly chargeable to that job.

Just call your nearest Foster office and get "Faster from Foster" delivery of the sections and lengths you need anywhere in the U. S. A. (and in many foreign countries). Our nationwide warehouse and field stocks are always complete enough to take care of the biggest job requirements.

Foster stocks all standard piling sections in current use: straight, archweb, Z, corners, crosses, tees and fabricated connections. A call is all it takes for complete service on construction products, and "on-time" deliveries.

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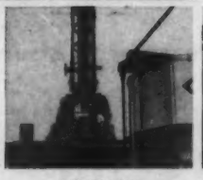
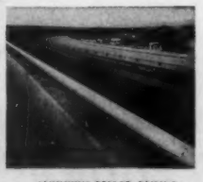


H-BEARING PILE
Lake Texoma Bridge, Texas, Okla.
Massman Construction Co.



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every trip
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TWO LOADS
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for a little more fuel per shift. One
operator handles both scrapers!

You save on maintenance:

Upkeep is only pennies-per-hour
more than for a single scraper. You
have six tires in place of four, but
there is only one engine, one trans-
mission, one final drive to care for

This C-Tandem packs in 36 yards in 40 to 55 seconds for a California Contractor

This 270-hp C Tournapull® with tandem 18-yd C Fullpak® scrapers, moved an average of *36 yards per cycle* on a grading project at Pinole, California, for San Francisco Contractor Al Periera. With a 191-hp pusher, load times (to fill both scrapers with 18 yd each) averaged from 40 to 55 seconds.

Periera's C-Tandem kept pace with a single scraper C 'Pull* on the same job, negotiated 18% grades and averaged about 13 more gallons of fuel per shift than the single "C". It performed every standard maneuver, including full U-turns and full back-ups, with no tendency to jack-knife.

*Trademark

You need less pusher-power:

In LW Tandem operation, your pusher loads only one scraper at a time, so there's no need for a "super" pusher or for tandem pushers. You save *time*, too, because *one* tractor loads *two* scrapers in line . . . no time lost for repositioning.

Your haul roads last longer:

LW Tandems are no higher, and no wider, than single 'Pulls. They can use any haul road. With Tandem scrapers you use *fewer* machines, have less traffic congestion and delay. And ton-for-ton, there is less pounding of haul roads with Tandems than with single scrapers of equal capacity.

You get more adaptability:

You can meet changing job conditions by hitching or unhitching the Tandem scraper at will. And you can still interchange your basic scraper for a Rear-Dump, or other LW attachments, to spread your prime-mover investment over more jobs.

Use
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loads only one scraper at a time, so there's
dem pushers. You save *time*, too, because
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by hitching or unhitching the Tandem
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r prime-mover investment over more jobs.

PRIME-MO
143-h D Tourno
226-h C Tourno
270-hp V- C Tourno
276- C Speed (4-whe prime-mo

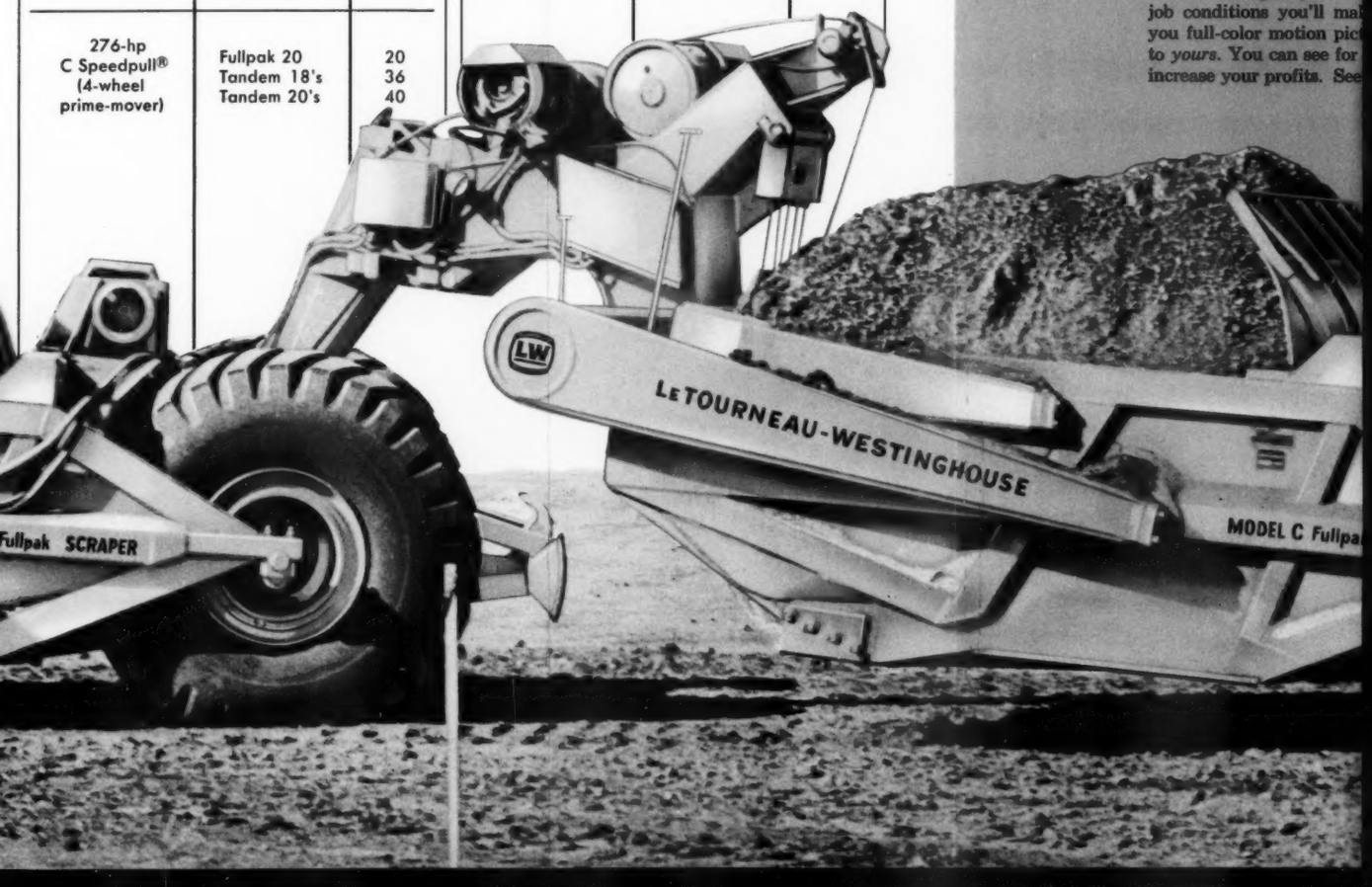
Use Tandem scrapers behind any 'Pull:

Choose from 9 to 56 cu yd capacity

You can pull and operate two scrapers with *any* LW electric-control 'Pull prime-mover. Here are *some* of the LW scraper combinations now available to move dirt at a *new* low in cost-per-yard:

PRIME-MOVERS	SCRAPERS	TOTAL HEAPED YARDS
143-hp D Tournapull	Model D	9
	Tandem D's	18
226-hp C Tournapull	Fullpak 18	18
	Tandem D's	18
270-hp V-Power C Tournapull	Fullpak 20	20
	Tandem 18's	36
	Tandem 20's	40
276-hp C Speedpull® (4-wheel prime-mover)	Fullpak 20	20
	Tandem 18's	36
	Tandem 20's	40

PRIME-MOVERS	SCRAPERS	TOTAL HEAPED YARDS
335-hp B Tournapull	B Fullpak	28
	Tandem 18's	36
	Tandem 20's	40
360-hp B Tournapull	B Fullpak	28
	Tandem 18's	36
	Tandem 20's	40
	Tandem B's	56



Where

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56 cu yd capacity

pers with *any* LW electric-control 'Pull
LW scraper combinations now available
-yard:

MOVERS	SCRAPERS	TOTAL HEAPED YARDS
5-hp rnapull	B Fullpak	28
	Tandem 18's	36
	Tandem 20's	40
0-hp rnapull	B Fullpak	28
	Tandem 18's	36
	Tandem 20's	40
	Tandem B's	56

Where

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Your LW Distributo or equip you with ne He can also give yo job conditions you'll you full-color motion to *yours*. You can se increase your profits.

Where LW Tandems pay off best

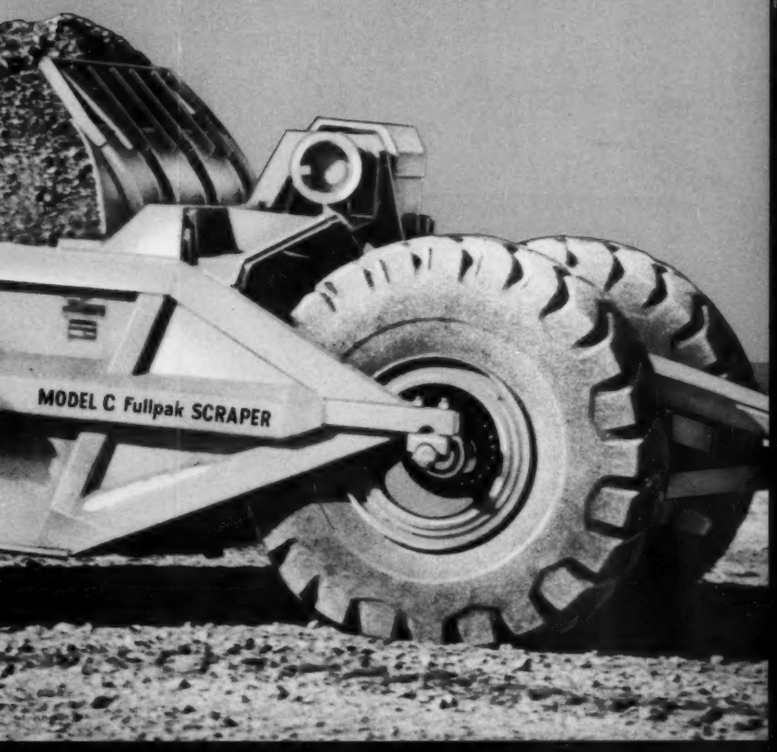
Use LW Tandems where the combined rolling and grade resistance of haul roads is 60 lb per ton or less on the loaded haul, or 120 lb per ton maximum on return routes.

Use LW Tandems on short hauls where you cannot take full advantage of single scraper speed.

Use LW Tandems in tough loading. Where your present pusher may not be able to load a 28-yard scraper, for example, it can *easily* load two 20-yard scrapers *in tandem*.

In general, use LW Tandems wherever and whenever you do not NEED, or cannot take ADVANTAGE of, the full power and speed of single scrapers. You will find that many of your jobs fit that description . . . where LW TANDEMS PAY OFF BIG!

Your LW Distributor can convert your *present* 'Pulls to tandem operation, equip you with new, 1960 'Pulls with tandem connections already installed. He can also give you reliable engineering data that will show you on what conditions you'll make *most* money with LW Tandems. He can show you full-color motion pictures of LW Tandems at work on jobs very similar to *yours*. You can see for yourself how these revolutionary LW Tandems can increase your profits. See your LW Distributor *soon*.



LW Tandem Hitch...big, simple, rugged: permits single-scraper maneuverability

This universal-swivel hitch securely connects the front scraper to the rear scraper in LW Tandems. The plate and hitch are welded to top members of the push-block frame of the front scraper, which are reinforced with high-strength steel channels. Its pivot-point is over the rear-axle of the front scraper. Electric and air lines "plug in" to simple, quick disconnects at the hitch.

This hook-up of scrapers is so simple that, once installed, you can add the extra scraper or take it off in less than half an hour.

The tandem hitch permits complete maneuverability. You can back up, turn in any direction, and perform any other maneuver that is possible with single scrapers. And there is never a tendency to jack-knife! 180° tandem turns are made in an area only 20 to 25% wider than is required for single self-propelled scrapers.

LW ELECTRIC CONTROL

provides the means for practical tandems

This is the control panel of a 'Pull Tandem. Its fingertip buttons control bowl-lift, apron, and tailgate... bottom row for the front scraper, top row for the rear scraper. By the simple action of moving a button, a circuit closes and transmits electric work-power instantly along flexible copper wires, to the desired control motor at point-of-action.

It is this unique 'Pull feature that makes possible the practical operation of a second scraper. Unlike mechanical or hydraulic power, electricity can be sent any distance, in any direction, along small-diameter, flexible wires. The power so transmitted arrives at its point-of-work in a split-second. No extra power source is needed.

Making tandem operation *practical* is only one of the remarkable advantages of LW "electrics." It gives immediate response — in 3/5ths of a second. It is easiest to operate — your operator merely moves buttons! It is completely weatherproof. No other control system can be maintained at full efficiency for less money and with less attention.

For most profitable use of 'Pull Tandems, maintain job-sites with fast LW "work-tool

With the tremendous pay-loads you can pack in LW Tandems, you'll want more than ever to ke your haul-roads, cuts, and fills well-maintaine You'll handle this important job easiest and at lea cost with these fast-working LW machines:

C TOURNATRACTOR®:

Use it to speed haul-road construction, cut-and-f maintenance, and dozens of other tractor jobs a over your spread. With 17-mph speed and instan shift, Tournatractor *gets* to a job faster, *works* faste And you can use its 218 hp to push-load scraper *even Tandem C's!* Popular on big jobs for towi sheepsfoot rollers.

LW MOTOR GRADER:

Fastest grader built, with 26.7 mph top speed, and higher working speeds gear-for-gear than any other make. One-piece frame for extreme ruggedness; big 63" circle, for accurate blade control; full view visibility, so operator can see both ends of blade as well as the road ahead. Seven models, to 190 hp, including two POWER-*Flow*® models with torque converters. Standard models offer 8 forward speeds, 4 reverse and 3 optional creeper gears.

LW

Set a New Standard for the Sixties with LW SPEED Equipment

Now is the time to check with your LW Distributor. He can give you full details on the revolutionary new LW Tandems, and will be proud to show you the full line of LW *SPEED* earthmoving equipment for 1960. Every machine in the line is as fast or faster than any similar piece of equipment on the market. LeTourneau-Westinghouse long ago mastered *quality* and *dependability*. Its leadership these values is an accepted fact all over the wor And now LW has added a new standard of SPEE and CAPACITY in earthmoving equipment, becau in today's era of tight profit-margins, only by mo ing more dirt in less time can you achieve *lowe net-cost-per-yard* and its resulting profits.

Only LW offers you proven equipment in all fo basic types of rubber-tired earthmoving machine scrapers, tractors, graders, and off-highway truc See your LW Distributor SOON!

LeTOURNEAU-WESTINGHOUSE COMPA
PEORIA, ILLINOIS
A Subsidiary of Westinghouse Air Brake Company
Where quality is a habit

Litho in U.S.A.

TP-2260-

Working platform used on loader aids in stripping forms

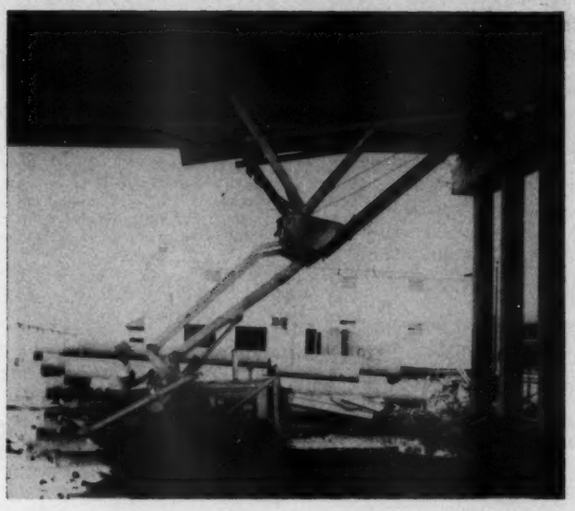
A contractor-built device makes stripping bridge deck forms much faster for J. H. Beckman Construction Co., Sioux Falls, S. Dak.

A plywood working platform, carried by the loader bucket of a John Deere 420 tractor, puts workmen in a position to strip the forms. The platform is supported by a wood and steel frame.

The lower member of the frame is made up of two 6-inch channels. Slots in the ends of the channels slide into the lip of the loader bucket. Two reinforcing bars run from the outer ends of the channels and hook over the upper edge of the bucket. The remainder of the frame is of wood members that are bolted together. Since there are no bolted connections tying the frame to the bucket, it is a simple matter to attach the device to the loader.

Generally, two men work from the platform. They place the forms on the platform until they have a full load. Then the loader operator lowers the platform to the ground.

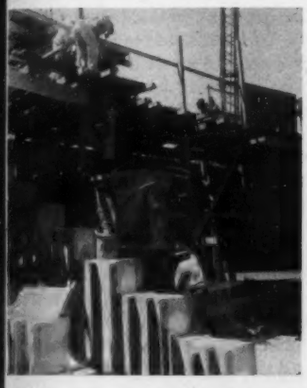
The men were stripping the forms from between the prestressed-concrete girders of a 1,311-foot viaduct in Aberdeen, S. Dak.



Bucket serves as hopper for loading buggies on two deck levels

In building Candlestick Point Stadium, the new home of the San Francisco Giants, the contractor had to place concrete in many places that were difficult to reach. Among these spots were some of the cast-in-place sections of the upper deck.

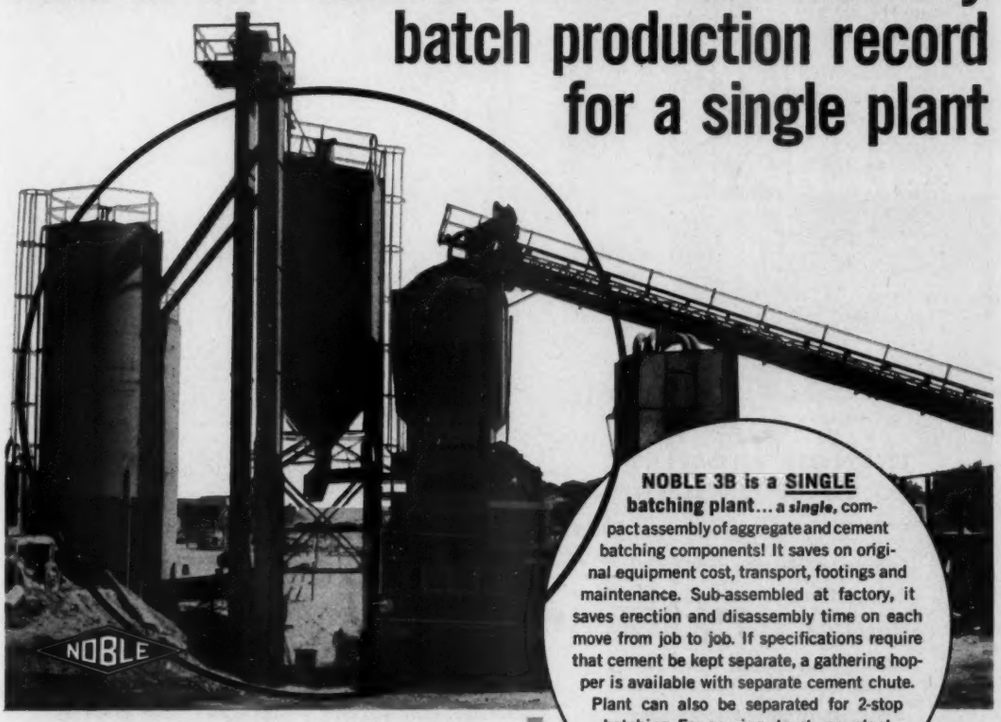
Contractor Charles L. Harney used a big Lima 50-ton truck crane to raise the concrete from transit mixers at ground level outside of the stadium to a Gar-Bro double-gated hopper on the high level of the upper deck. Buggies were filled from this hopper and wheeled directly to pours on this level.



To reach the next level, Harney devised the arrangement of tremie and bucket shown in the picture. A workman fills a buggy from the hopper on the upper deck and dumps it into the tremie hopper, which is set at that deck level. The men in the upper portion of the picture are dumping the buggy. The concrete flows down the short tremie pipe into a Gar-Bro 1-yard bucket set up on a stand on the deck below.

Workmen on this deck fill their buggies by simply operating the gate of the bucket with a rope. (The workman at the bottom of the picture is doing this.) They can then wheel the concrete to any point on that level without encountering grades or ramps. This arrangement also makes it possible for small pours to be made simultaneously on the two decks of the stadium.

NOBLE 3B PAVING PLANT sets new dry batch production record for a single plant



NOBLE 3B is a SINGLE batching plant... a *single*, compact assembly of aggregate and cement batching components! It saves on original equipment cost, transport, footings and maintenance. Sub-assembled at factory, it saves erection and disassembly time on each move from job to job. If specifications require that cement be kept separate, a gathering hopper is available with separate cement chute. Plant can also be separated for 2-stop batching. For pouring structures, plant can be easily adapted to produce transit-mix concrete.

Batching at the spectacular rate of up to 450 cubic yards per hour, a single NOBLE 3B paving plant supplied all concrete for slip-form paving on the 200,000 *cubic yard* Los Angeles River Flood Control Project. The largest daily output obtained was 4500 *cubic yards*.

By planning daily concrete placement in excess of 3,000 cubic yards, the estimated job completion time was set at approximately 6 months. With batching and placing frequently exceeding 4,000 *cubic yards* daily, the job was completed in 4½ months — *6 weeks ahead of schedule*. Based on a previous Los Angeles River job and on Lemoore Naval Air Station and Los Angeles International Airport jobs, the contractor, Griffith Company, had anticipated the remarkably high output potential of the NOBLE 3B plant. These projects demonstrated conclusively that, with NOBLE 3B, 4,000 cubic yards per day and more could be supplied by a single plant at a tremendous savings not only in initial equipment and erection costs, but in all phases of the job.

3B

NOBLE 3 batchers only, 1 for cement and 2 for aggregates, accurately weigh materials simultaneously for a *single* batch. Weights can be conveniently recorded on a NOBLE automatic graphic recorder. The factory installed NOBLE 3B electrical control center saves installation time and expense. All motors, complete with circuit breakers and magnetic starters, are pre-wired with quick-disconnect couplings to avoid expensive and time-consuming field wiring. Cement is rapidly and accurately metered by efficient feed screw rather than conventional gravity system. Positive cut-off by automatic louvre gate.

Write for Brochure 285 describing 3B and other NOBLE batching plants for highway and airfield paving contractors.

NOBLE COMPANY • 1860-7TH ST., OAKLAND, CALIF. • TEMPLEBAR 2-6765

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For more facts, use Request Card at page 18 and circle No. 280

HRB bulletin covers night visibility

■ "Night Visibility, 1959", Bulletin 226 from the Highway Research Board, contains seven papers. Subjects discussed are retinal sensitivity and night visibility; background and objectives of the U. S. Standard for colors of signal lights; proposed changes in traffic-signal color standards; and surface-mounted lights on roadways for guidance.

Concluding papers deal with visual benefits of roadway lighting; vision at levels of night road illumination; and factors of educational value for obtaining safe night driving speeds.

The $1.20 bulletin is available from the HRB, 2101 Constitution Ave., Washington 25, D. C.

The top bench of a 115-foot cut—the biggest on the 4.8-mile grading job near Clinton, N. J.—is started by a Bucyrus-Erie 88-B shovel. The rig uses a 5-yard bucket to load an International 20-yard Payhauler. More than 3,600,000 yards of earth and rock is being moved on the contract.

Big spread tackles big grading job

The largest earthmoving job to b handled by the New Jersey Stat Highway Department in a single contract is turning into a proving groun for equipment.

Yonkers Contracting Co., Yonker N. Y., has the task of moving ove 3,600,000 cubic yards of combine rock, shale, and earth—almost 2 million yards of it rock—for the construction of 4.8 miles of Interstat road. The $6,379,960 contract include grading, drainage, and the construction of five bridges. Paving will be le under a separate contract in the future.

Moving in its huge equipment fleet Yonkers Contracting broke ground a the job's two biggest cuts. One, involving some 1,300,000 yards of earth and rock, is at Jugtown Mountain west of Clinton, N. J., and the second with about 675,000 cubic yards of excavation, is at Turkey Hill. The distance between these two cuts is about 3,000 feet; in this stretch, 1,700,00 cubic yards of material is required. At its deepest point, this fill will be 107 feet high and about 600 feet wid at the base of the slope. The Jugtown Mountain cut, about 2,300 feet long will be 116 feet wide at the bottom and between 375 to 400 feet wide a the top of the slopes. Its depth will be about 115 feet.

The contractor started excavation by cutting 20 to 30-foot benches across the entire width of the cut with five shovels. As one bench progresses to the opposite slope, another bench is started at a lower level. In this way, work is done from many benches simultaneously.

Four Northwest 80-D 2½-yard shovels and two Bucyrus-Erie 88-B 5-yard shovels are being used to handle the excavation. The amount of boulders in the earth excavation, together with the expected rock strata at lower levels, eliminated the use of scrapers.

Big hauling fleet

The shovels are loading a fleet of 15 International 20-yard Payhaulers and 9 Euclid 18-yard rear-dumps that haul the excavation to the adjacent fill areas. When the contractor began excavation operations, only three 80-D's were employed with the 88-B, and the daily 8-hour production rate was 7,000 cubic yards. This rate has been substantially increased with the addi-

PARSONS® 170 WIDE-WHEEL TRENCHLINER®

TRENCH WIDTHS: 20 TO 32 INCHES

- maximum digging depth 5'9"
- hydraulically-driven conveyor — belt speeds independent of digging wheel speeds
- 30 digging speeds from 12" to 25 lineal feet per minute
- heavy-duty cast-steel buckets
- double-point "Tap-In" teeth — self-sharpening, reversible
- quick-change gumbo buckets
- retractable bucket-cleaner
- hydraulic wheel-hoist on power-tilt mast
- standard tractor crawlers — 16" grouser-type treads, or 12" flat shoes optional
- choice of gas or diesel power
- gears enclosed in oil; shafts on antifriction bearings

Developed to meet the demand for wide work range in a medium-size machine, Parsons 170 wheel-type Trenchliner digs up to 32 inches wide, at depths to 5¾ feet. With this extra capacity, you get smooth, positive wheel control. Hydraulic power raises and lowers the wheel on vertical mast with fractional-inch accuracy — maintains close grade tolerance on drainage, pipeline, utility trenching — and highway widening. Mast tilts for traveling.

Hydraulic control system on conveyor gives belt speeds up to 600 feet per minute — *completely independent of digging wheel speeds.* Belt easily handles maximum yardages from the extra-wide wheel — puts spoil bank well back beyond edge of trench. To suit various digging conditions, the 170 has round or square-bottom buckets with "Tap-In" teeth — solid or tine backs — also, quick-change gumbo buckets. Have Parsons distributor demonstrate what this 170 Trenchliner will do! Call him today.

Want more facts?

Mail to PARSONS Company, Newton, Iowa
Send literature on ■ 170 ■ 155 Trenchliner
NAME
TITLE
COMPANY
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CITY
STATE
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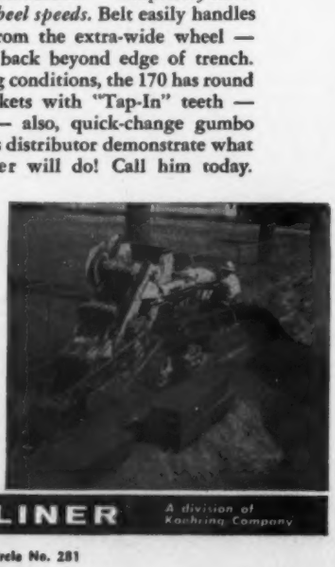
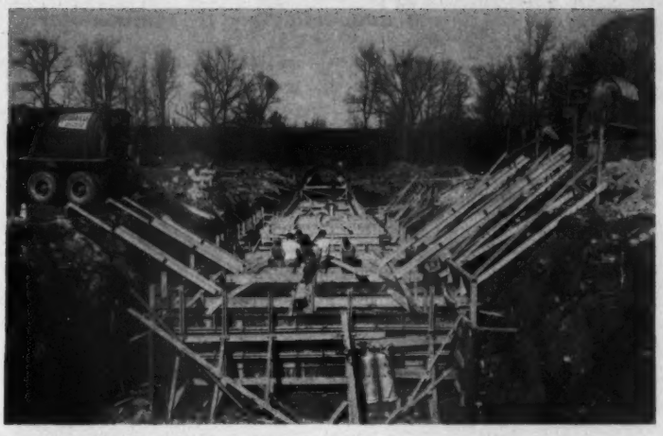
10 SIZES! For any size trench, from small residential service connections to biggest storm sewers, water and gas mains, check Parsons line. There are 10 different models to choose from: 5 wheel-types — digging 12 to 52 inches wide, at depths to 8½ feet. 5 ladder-types—digging 6 to 72 inches wide, at depths to 19 feet. One of the small ladder-type Trenchliners — model 155—shown at right.



PARSONS TRENCHLINER A division of Kaehring Company

For more facts, use coupon or Request Card at page 18 and circle No. 281

At the start of the work, International Payhaulers traveled over steep haul roads to bring excavated material from top benches to adjacent fill areas. Scrapers were ruled out for this job because of the amount of boulders.



One of the two reinforced-concrete culverts built early in the job is located in the area of the largest fill. The cast-in-place culvert has a semicircular arch supported on a flat slab. Crews are building 30-foot sections at a time with ready-mix concrete.

tion of the fourth 80-D, a second 88-B, the maintenance of 1,500-foot average haul distances, and two 8-hour shifts.

The shovels working the benches are assisted by four International TD-24's, one Cat D9, two Allis-Chalmers HD-20's, and two Allis-Chalmers HD-16 tractor-dozers. Two Adams graders are used to keep the haul roads in topnotch condition. A pair of LeTourneau-Westinghouse rubber-tire Tournadozers assist the tractor fleet. These rigs provide the needed maneuverability in moving equipment between various points along a job.

To permit the future paving of dual 25-foot roadways separated by 12-foot shoulders, the graded width of the roadway will be a minimum of about 140 feet.

This contract is part of the 68-mile Interstate 78 that will cross New Jersey from the Holland Tunnel to the Delaware River at Phillipsburg. Estimated cost of the superhighway is $388.5 million.

Personnel

Yonkers Contracting personnel on the job include Arthur Ellison, project manager; Alvin Pottle, project engineer; and Floyd Hilton, the field superintendent. The New Jersey highway department is represented by E. Benoist, resident engineer, grading, and W. Birkhead, resident engineer, structures. THE END

Booklet on reinforcement of asphaltic concrete

■ Free copies of "Welded Wire Fabric Reinforcement of Asphaltic Concrete Overlays," a technical bulletin published earlier this year by the American Road Builders' Association, are now available from the Wire Reinforcement Institute, Dept. 238, National Press Bldg., Washington 4, D. C.

The major portion of the booklet is devoted to practical hints and recommendations for the designer and the contractor, including a detailed discussion of the devices that assure successful handling of the wire fabric. Typical drawings, which may be adapted by designers, show layout and positioning of the fabric in different applications. Suggested asphaltic-concrete spex are included.

Exclusive WALKING BEAM action....
WALKING BEAM in "semi-locked" position. Lead guide roll can rise above but not go below its normal position.
LEAD GUIDE ROLL encounters high spot. This light pass exerts only normal pressure . . . "prepares" the material.
CENTER GUIDE ROLL rides the hump with all its weight, plus weight of lead guide roll, and some of the drive roll weight . . . nearly triples normal compaction weight at this point.
DRIVE ROLL follows through with normal pressure as it passes over. (Notice, lead roll doesn't "dent" surface.)

irons out the high spots...*without* cross-rolling

Time is a key factor on asphalt paving jobs. *Finish*-rolling should be done while materials are pliant and workable. Otherwise, when waves or humps have to be smoothed out later by cross-rolling, materials have already set. This can cause serious *internal* damage to the material and hasten deterioration under traffic. To overcome this problem, Buffalo-Springfield® brings you *complete compaction control* in a 3-axle tandem that eliminates cross-rolling on city streets (above), highways, airports.

This variable-weight, 13-20 ton roller, with its unique "Walking-Beam" action, applies extra pressure where and when needed . . . *on the high spots only.* Produces a smooth, well-compacted surface during the important *initial* leveling period . . . does it in fewer passes, too! In fact, performance reports show that it compacts 60% more tonnage per day than a standard 2-axle tandem working on the same type surface. "Walking-Beam" may be semi-locked, fully-locked at any time . . . or completely unlocked to roll vertical curves, warped surfaces. *What's more,* hydraulic power raises the lead guide roll, or center guide roll, to operate this Buffalo-Springfield roller as a *short-* or *long*-wheelbase 13-20 ton 2-axle tandem. *More* versatility is shown below.

3-WAY COMPACTION IN *ONE* PASS ▶
Equipped with segmented lead roll, vibratory center roll, and smooth-faced drive roll, this same 3-axle tandem delivers a 3-way "punch" that can mean additional savings on your work. There's no other 3-axle tandem on the market that offers you so much versatility for your money. *Why don't you look into it today?* Call Buffalo-Springfield distributor, or write us.

B902

BUFFALO-SPRINGFIELD CO. SPRINGFIELD, OHIO Division of Koehring Co.

PNEUMATIC TIRE • VIBRATORY • SEGMENTED ROLLERS • 2 AND 3-AXLE TANDEMS • 3-WHEEL ROLLERS • KOMPACTOR®

For more facts, use Request Card at page 18 and circle No. 282

Territory and branch managers named by White Motor

■ David W. Sheehan and Harold W. Haldeman have been appointed territory managers in the North Atlantic states by the White Truck Division of The White Motor Co., Cleveland. Sheehan takes charge of distributor locations in metropolitan New York and northern New Jersey. Haldeman will head outlets in Connecticut, Maine, Massachusetts, and Rhode Island.

H. D. Collins has been appointed manager of the Chicago south side branch. He will be in charge of sales, parts, and service for both White and Autocar trucks.

Kenneth P. Strother replaces Collins as branch manager at the Portland, Ore., office.

E. H. Gustafson is manager of a new Florida territory.

The Reo Division, Lansing, Mich., has made Donald J. Sherman public relations and sales promotion manager.

Valley Iron Works now an A-C subsidiary

■ The Valley Iron Works Co., Appleton, Wis., has become the Valley Iron Works Corp., a wholly owned subsidiary of the Allis-Chalmers Mfg. Co., Milwaukee. The subsidiary continues to operate under the present management. Valley Iron Works produces paper-making machinery.

To meet ALL your requirements for

Concrete Forming

. . . EFCO and ECONOMY FORMS

Typical jobs using EFCO ECONOMY FORMS

3 form services:

1. *EFCO Steel Forms*—Available on a purchase basis with return option. Owners are supplied with free form erection drawings.
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3. *Special Economy Forms*—Designed and built to your specifications for unusual jobs. Include special forms for precast, prestressed concrete.

Versatile:

Adaptable to a wide range of projects including:

- Foundations and Walls
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- Bridges, Bridge Columns
- Tanks—Circular and Rectangular
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- Sidewalks
- Culverts
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Economical:

Save you time, labor, material. Steel faces assure lifetime service. Forms lock together quickly, easily, with a simple twist of a clamp.

Prompt Delivery:

29 offices, and warehouses throughout the nation, assure prompt service and speedy delivery. Economy Forms of Canada, Ltd. supplies Canadian contractors.

For further information . . . .

Mail Coupon TODAY

Economy Forms Corp.
Box 128-E, H. P. Station
Des Moines, Iowa

Please send literature on items checked, and address of nearest sales office.

- ☐ Catalog on EFCO Steel Forms
- ☐ Catalog on Economy Steel Forms
- ☐ Catalog on Special Economy Forms
- ☐ Folder on Economy Forms for pre-cast, pre-stressed concrete

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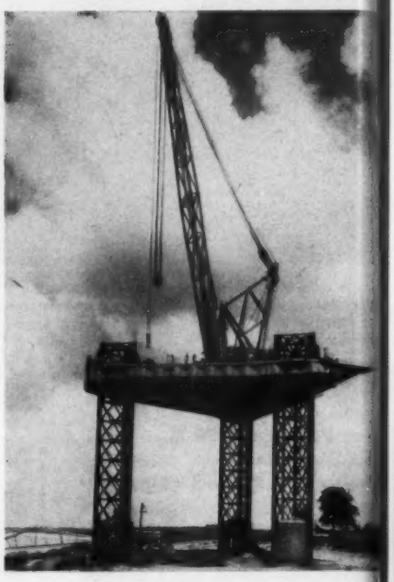
Firm Name _____

Street Address _____

City _____ State _____

For more facts, use coupon or Request Card at page 18 and circle No. 283

For more facts on Insect, circle No. 28



This bridge-building rig that was made by R. G. LeTourneau, Inc., is undergoing final tests before it is put to work constructing a 6-mile concrete bridge across Lake Maracaibo in Venezuela. The 30-story high machine has a 250-ton-capacity crane.

Walking platform to build 6-mile bridge

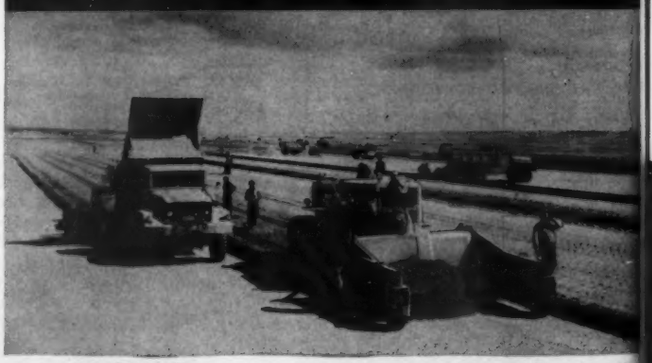
An electric bridge builder—a 2,000-ton portable 3-legged island with a 250-ton marine crane towering above its deck—is literally leading the Lake Maracaibo Bridge step-by-step across six miles of brackish water in Venezuela. As soon as one section of the bridge is completed, the platform lowers itself to the waves, raises its three giant feet from the gumbo lake bottom 70 feet below, then moves a short distance forward and again raises itself above the water.

Designed and built by R. G. LeTourneau, Inc., Longview, Texas, the machine is equivalent in height to a 30-story building. To achieve the maximum in stability, LeTourneau patterned the bridge-building platform after the mobile platforms the company has built for offshore oil drilling operations.

Massive crane

The giant crane has a lifting capacity of 250 tons, with the 210-foot boom extended out 65 feet from its base. It will handle prestressed concrete beams weighing close to 500,000 pounds. To accomplish this, the crane is powered by seven LeTourneau ac and dc electric motors, which in turn are powered from dynamos driven by a battery of Cummins diesel engines totaling about 1,200 horsepower. More than 8,500 feet of 1½-inch steel cable

JERSEY SPREADERS



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MANUFACTURERS OF THE JERSEY SPREADER

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The BUTLER TX-4 Roadbuilder's Plant Adapts to 1 2 3 or 4 Pavers...

So What's the Problem in Making Your Choice of Batching Equipment?

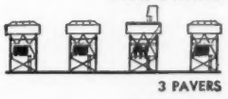
Start with a One Paver Set-up . . . Expand Your TX-4 as You Grow

The basic TX-4 provides two TX-4 bins, one compartmented for cement and sand, the other for two sizes of stone. This easily handles one or two dual drum pavers.

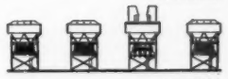
Then for three pavers, simply add two more bins with batchers.

And for four dual drum pavers, just add a batcher to each of the four bins. It's as simple as that. The diagrams at the right tell the story.

1 AND 2 PAVERS



3 PAVERS



4 PAVERS

The TX-4 . . . Simplest and Fastest to Erect, Dismantle and Move

Bin section is complete, ships and erects in one piece. Batcher section also is complete, erects as a unit. All piping and wiring are in-place. Quick connectors for air and current make hook-up a matter of minutes.

So buy a plant of adequate expandability — and avoid going through the bother of trade-ins, delivery delays and awkward, costly time-consuming moves from job site to job site. Settle your problems now, once — and for all — with a BUTLER TX-4.

Do you want to know more about the Butler TX-4 and its versatility in production? Just write "TX-4" on a postcard with your name and address. We'll rush complete details immediately.

BUTLER BIN COMPANY

971 Blackstone Avenue • Waukesha, Wisconsin

For more facts, use Request Card at page 18 and circle No. 271

Ohio contractor sets earth-moving record of 100,000 yard day

GULF MAKES THINGS RU

When you have scrapers big enough to handle 50 yards heaped . . . and you keep them rolling at more than 95% availability every working day . . . you can build quite a reputation as a big-league earth mover.

That's the story at C. F. Replogle, Circleville, Ohio. With king-sized MRS scrapers and other heavy equipment—all serviced with Gulf fuels and lubricants—their company earth-moving record is over 100,000 yards a day.

One of Replogle's recent big projects was a 3-mile section of the Cincinnati-Conneaut Thruway near Belleville-Mansfield, Ohio. The contract called for moving some 2,000,000 yards of earth, paving, and constructi eplogle, 11 bridges. They've already completed the earth-movi iesel fue on schedule, in spite of weather delays. According udge or Charles Thompson, Operations Manager, Gulf fu ve when lubricants and on-the-job service had a great deal to esulting with the fast pace of the entire operation.

"We know our engines run clean on Gulf diesel fu grease, because we have no injector or pump trouble," says ony oil Thompson. "This pays off in equipment availabil On your Our equipment is available over 95% of the time." etter! Ca

Dean Shellhouse, Superintendent of Maintenance Gulf Con

Gulf man on-the-job checks fuel and lubricant requirements at Replogle project on 3-mile section of Cincinnati-Conneaut Thruway. At right is Robert Williams, Gulf Sales Engineer with Charles Thompson, Operations Manager of C. F. Replogle Construction Company.

yard day using Gulf fuels and lubricants...

GS RUN BETTER!

onstructi eplogle, adds: "We use over 3,000,000 gallons of Gulf th-movi esel fuel a year, and have no problems with gum, cording udge or sulfur deposits. A first line fuel is not expen- Gulf fu ve when you consider freedom from breakdowns and deal to sulting costs."

Replogle also uses Gulf Super Duty Motor Oil, Gulflex diesel fu grease, Gulf Multi-Purpose Gear Lubricant, Gulf Har- e," says H ony oil for compressors and Good Gulf gasoline.

vailabil On your next project, see how Gulf makes things run e time." tter! Call your nearest Gulf office, or send for 88-page tenance Gulf Contractors' Guide."

GULF

GULF OIL CORPORATION
Dept. DM, Gulf Bldg., Pittsburgh 30, Pa.

Send copy of "Gulf Contractors' Guide."

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1415 Elliot Place, N. W. Washington 7, D. C.

weighing more than 15 tons, is used in lifting the loads.

Despite its immense size and capacity, the crane pivots on a ball and socket 20 inches in diameter.

In addition to lifting and placing sections for the all-masonry bridge, the bridge-building machine will set the prestressed-concrete piles that support the structure. Some of these are 180 feet long and weigh 100 tons.

Other features

The crane has a strawline or auxiliary hook, which is designed for lighter work, but which can lift 100 tons with the boom extended out to 100 feet.

An important feature is a self-leveling device. If one leg begins to settle more than the other two, this device automatically sounds a warning horn and can activate the nine electric motors on that leg to bring the platform level again.

After the bridge project is completed, the basic platform can be put to other uses. The crane can be removed and, with a few minor modifications, the unit can become a mobile offshore drilling platform. It is expected that it will be left intact and used for various types of offshore construction work.

The $100 million bridge will connect the oil city of Maracaibo with central and eastern Venezuela. It will also form an important link in the Pan American Highway project. The bridge will have a ship clearance of 160 feet. THE END

Book presents principles of pavement design

■ "Principles of Pavement Design," by E. J. Yoder, presents the basic principles that apply to airfield and highway pavements, both flexible and rigid. The material in the book may be used on the undergraduate level; a prior basic knowledge of soil mechanics and concrete mixes is required.

The book is divided into five parts. Part 1, on fundamental principles, covers pavement types and wheel loads; stresses in rigid and flexible pavements; pavement behavior under moving loads, climate, and rigid-pavement pumping. Properties of pavement components and design tests is the subject of Part 2, which reports on soils; evaluating soil strength and other properties of soils, base course, and paving materials; subgrades; soil stabilization; granular bases and subbases; shoulders; and bituminous surfaces.

Part 3, on the design of flexible pavements, covers airport and highway pavements. Part 4, on the design of rigid pavements, reports on reinforcing-steel joints, and airport and highway pavements. Part 5 contains data on pavement distress, performance surveys, evaluation, establishing design criteria, and strengthening existing pavements.

References and problems conclude each chapter. The $13.25 book may be purchased from John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, N. Y.

A 4-YARD LOAD OF GRAVEL is picked up by a Trojan 404 at the Sun Valley plant of Consolidated Rock Products Co., Los Angeles sand and gravel producer. The tractor shovel can load a truck and trailer in four passes, or it can load a 25-ton-capacity truck in just 1½ minutes.

count on **HERMAN NELSON** *everybody else does!*

PORTABLE AIR HEATERS

$25 MILLION CEMENT PLANT for Lehigh Portland Cement Company required safe, clean portable heat for drying interiors of concrete silos. Lehigh specified Herman Nelson heaters for assurance of fume-free, smoke-free heat. Plant is at Miami, Florida. Contractors are Walsh-Perini-Rooney Companies.

$14 MILLION FREEMONT CANYON Power Project keeps Herman Nelson "Thrifty" heaters busy day and night curing concrete, and keeping water lines from freezing. Contractor: Coker, Kiewit, Cunningham.

SAFE, SURE PORTABLE HEAT from a Herman Nelson heater dries out masonry work and prevents freezing at Cazenovia Junior College, Nedrow, New York. Contractor: R. A. Culotti Construction Co.

FREE WEATHER FORECAST SERVICE
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AMERICAN AIR FILTER COMPANY, INC.
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BUY OR RENT
Your safest investment is Herman Nelson Portable Heaters! For name of nearest dealer, contact your local AAF representative. Telephone listing in all major cities. Or write direct to Portable Products Dept., American Air Filter Co.

For more facts, use Request Card at page 18 and circle No. 286

The crew of this company-built crusher takes about half an hour after a shift to fuel, grease, and oil the equipment during a job near Aberdeen, S. Dak. Under the contractor's maintenance program, each operator of equipment has his own preventive-maintenance job to do on his own equipment. The crusher crew, for instance, also makes mechanical repairs. A GMC truck with Galion body is receiving the ¾-inch material.

Maintenance is everybody's job

"Watch Maintenance. Take care of the little things first. The big things will take care of themselves."

So reads a sign in the main office of P. A. Bradbury Construction Co. in Aberdeen, S. Dak. And this is a policy the company makes every effort to follow.

On the job, the men take care of such little things as greasing fittings, changing filters, checking brakes. Then such big things as equipment performance and job production see to take care of themselves.

No easy job

For an asphalt paving contracto keeping a watchful eye on mainte nance is no easy job. Work in th short 5-month season is fast an furious. In the need to put out th work, the field men tend to neglec checking their equipment. Yet in thi type of construction, preventive main

SIMPLICITY
in the Heart of the Modern Diesel Engine

Simple—Only 8" long, 3¼" wide, 5¼" high . . . weighs less than 10 pounds . . . fewer parts to service, fewer adjustments to make.

Versatile—Because of accessories that can be built in or added at low cost taking up no, or very little, valuable engine block space.

Economical—Initial cost is less, costs less to service, saves money because of its dependable service.

HMS ROOSA MASTER

Write for guides to better fuel injection. One features the pump, the other an efficient, economical filter.

HARTFORD MACHINE SCREW CO., HARTFORD 2, CONN.
Division of Standard Screw Company

For more facts, use Request Card at page 18 and circle No. 287

DON'T BE FOOLED
all tilt trailers are NOT alike . . .

only a MILLER:* is so perfectly balanced
a child can hitch it!

10" deep side channels
10" deep tongue frame
*—has a SEPARATE tongue frame
platform pivot point

The tongue in the OT-15 is not merely suspended from the platform frame (as in many tilt trailers), it's a frame in itself. With a platform pivot point way back near the rear wheels, MILLER provides the lowest possible platform without a "beaver tail" hump.

ORDINARY tilt trailers creep or force wheels back on loading
need hazardous beaver tail with unsafe over-the-hump loading
Hazardous ridge where control is poor

Like beauty, performance is more than skin deep. A lot of tilt trailers may look alike "at a distance" . . . but when you *really compare* . . . on a feature-by-feature basis, you'll find so much more performance-per-dollar in a MILLER Tilt-Top. Look for example, at the amazing unretouched, hitching photo above. The massive OT-15 weighing about 6000 lbs. is so perfectly counterbalanced that it takes only 35 lbs. of lift to hitch the tongue. And look at *all the other advantages*, illustrated at the left, that you get with a MILLER. When buying a trailer *don't be fooled* by price comparisons alone. Compare where it counts . . . and you'll find each of 10 MILLER models from 4 to 22 ton capacity the best buy, by far!

Model "OT-15" 15 ton capacity

Miller® Tilt-Top Trailer Inc.
456-C S. 92nd St. Milwaukee 14, Wis.

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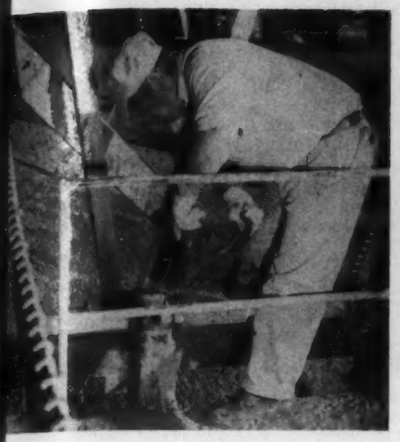


One of the operators of the Cedarapids plant uses a Lincoln grease gun to apply grease to the bearing of the main flywheel shaft. This preventive-maintenance work is also done in the evening after the end of a shift.

Have gun—will lubricate. That's Lloyd Walker, in charge of preventive maintenance on the truck fleet. Using Mobil lubricants, a Lincoln air-powered grease gun, and, after dark, a drop light, he works three or four hours after shutdown.

The D7 operator who feeds the hot-mix plant spends half an hour after the day's work to grease his machine and give it a check to find any trouble spots that may be developing. He is applying Mobil grease to the track rollers with an Alemite gun.

...enance is extremely important. Most of the equipment must operate in a shower of dust kicked up by either the crusher or the asphalt plant. Under these conditions, the equipment won't last very long unless it's taken care of.

Lots of wheels to keep running

Bradbury has a lot of equipment to maintain. During the construction season, three portable asphalt plants, four crushers, four finishing machines, a fleet of over 100 dump trucks, and many other pieces of heavy equipment are at work. The company operates in North and South Dakota, and does over $2 million worth of work each year.

According to P. A. Bradbury, president of the company, "The man with the grease gun and the man with the tool chest are just as important to us as the operators of the equipment. We try to make them feel they are important, and we pay them accordingly.

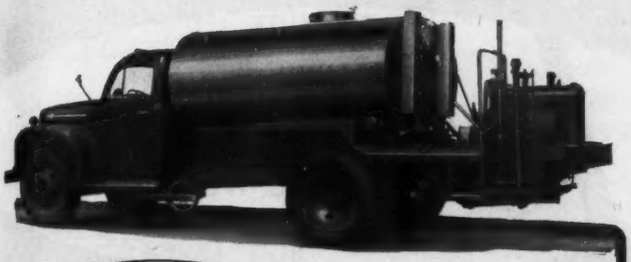
"Maintenance is a big thing with us. During the off-season, we get the equipment in top operating shape. In fact, we spend from $110,000 to $140,000 each winter on parts and labor to overhaul the equipment. During the summer, we try to keep the machines in good condition by constantly stressing our preventive maintenance program."

Good production

As a result of the strict maintenance program, Bradbury has a reputation in the Dakotas for taking good care of his equipment and for consistently high production.

On one of its recent jobs, Bradbury was really rolling out the blacktop on the relocation of U. S. 281 north of Aberdeen. During good weather on the 19-mile contract, crews were putting down 1,500 tons a day. A 13-year-

NEW DESIGN!
NEW EFFICIENCY!



Asphalt men designed it. Asphalt men tested it. The new Standard Asphalt Distributor has been field tested for two years on every type and grade of asphalt available, over three million gallons in all.

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PRESSURE DISTRIBUTOR

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The Model 424-56 is built in 1000, 1250 and 1500 gallon capacities as standard and can be furnished in other capacities, either truck or semi-trailer mounted.

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Standard Steel Works, Inc. NORTH KANSAS CITY, MO. PD-157

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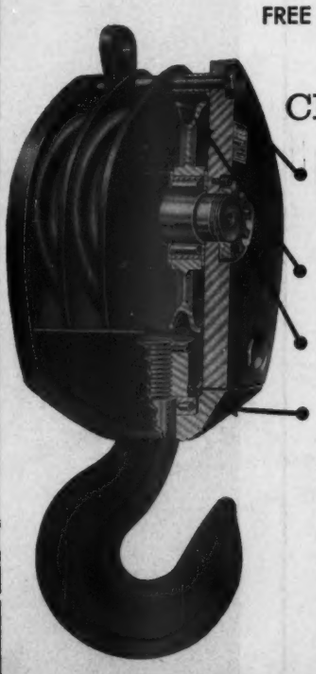
Completely
STREAMLINED
FREE OF ALL OBSTRUCTIONS

DELUXE
CRANE BLOCK



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- Alloy Steel Sheaves with Flame Hardened Groove
- Extra Large Center Pins and Bearing Diameters
- Timken Thrust Bearing for Free Swivelling Under Loads

McKISSICK BUILDS A BETTER BLOCK FOR EVERY PURPOSE

McKISSICK

McKISSICK PRODUCTS CORPORATION
Box 2496 Tulsa, Oklahoma

For more facts, use Request Card at page 18 and circle No. 290

An unusual feature of the job was the use of butane gas, from 6,000-gallon tanks, foreground, to heat the Hetherington & Berner dryer of the Cedarapids 4,000-pound-batch plant. According to the firm, the gas is as cheap as oil, makes for a cleaner plant, and eliminates the need for a forced draft in the dryer.

A new specification being used by the South Dakota State Highway Commission [illegible] met. A Rosco 9-wheel rubber-tire roller follows the Barber-Greene finisher on the freshly laid 1½-inch binder course. Tandem rollers then compact the mix. Rubber tires of the Rosco help knit the surface of the hot-mix.

(Continued from preceding page)

old Cedarapids plant that had a rated capacity somewhat less than this—120 tons per hour—mixed 4,000-pound batches. The company-built crusher, working in an adjacent pit, kept up with the high production.

Part of the credit for the production can be taken by the men's participation in an active maintenance program. On the job, maintenance is a cooperative effort, with the superintendent making sure everyone cooperates.

It's everyone's job

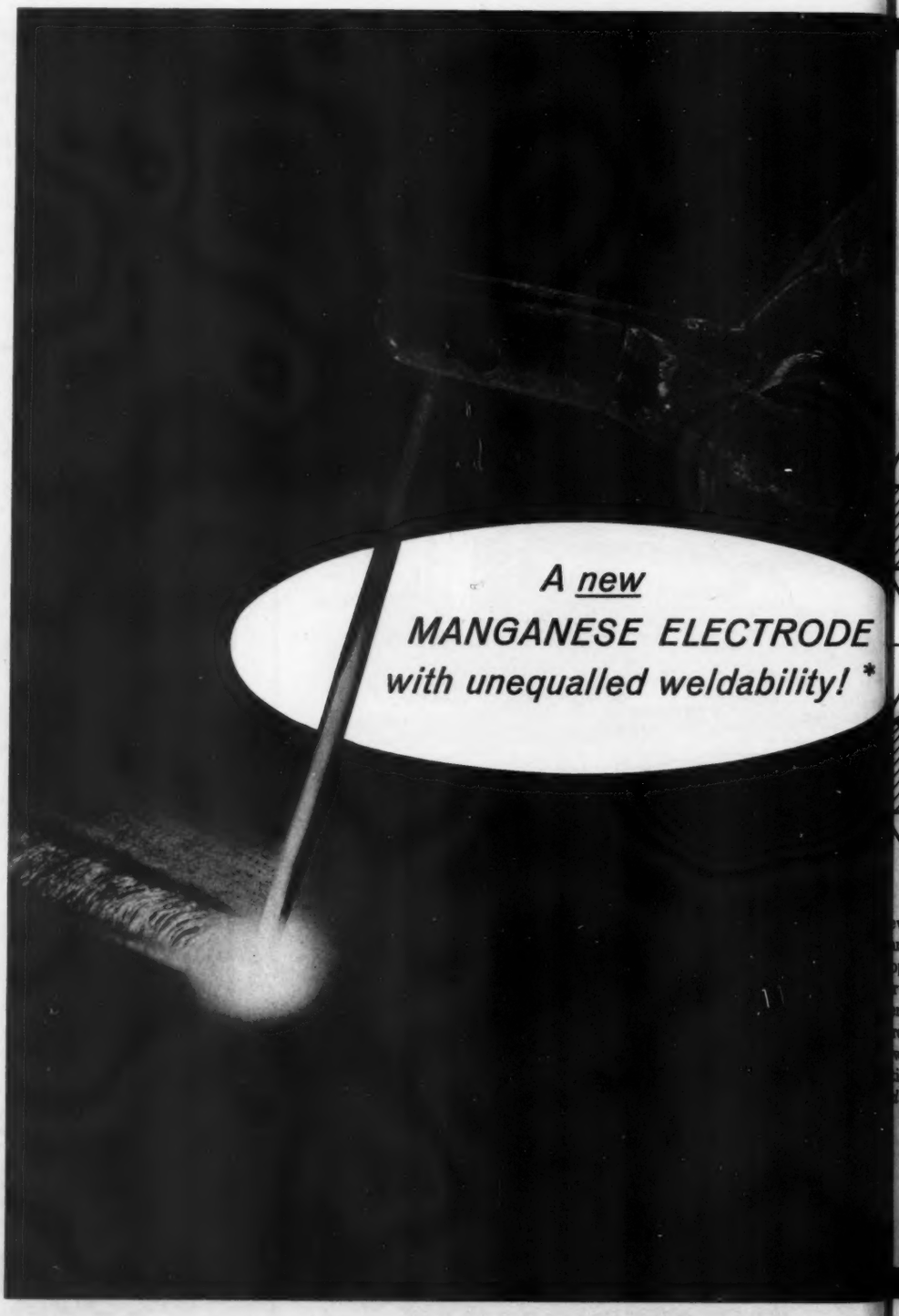
The oiler handles primarily the preventive maintenance on the haul trucks. The plant foreman is responsible for maintenance of the asphalt plant. His men grease and check over the plant each evening after the job shuts down. The same procedure is followed by the foreman of the crushing plant and the road foreman. Operators of tractors, rollers, patrols, and other heavy equipment grease their own rigs after hours. A mechanic is assigned to the job to take care of truck breakdowns and to help when necessary on the repair of other equipment.

Oiler takes the trucks

By owning its trucks rather than leasing them, Bradbury has much better control over truck maintenance—and consequently their performance. The oiler keeps them in top operating condition. On this job, he generally worked on the trucks for three or four hours after the plant shut down. Using a Lincoln air-powered grease gun and a drop light, he worked in the open in the plant area.

He keeps no records or check list on the lubrication. He doesn't need to. The oiler, Lloyd Walker, has been working with the company for four years. From experience, he knows what needs greasing and when to grease it.

On this job, each truck was greased twice a week. The oil-type air cleaners of trucks hauling to the finishing machine were cleaned twice a week. Air cleaners on trucks hauling from the crusher were cleaned once a day. Oil was changed once a week—on Sunday when the plant was shut down. During the greasing and oiling, many



A portable storage tank on the GMC pickup of road foreman Sig Hultman is used for a quick fueling of the B-G finisher. Generally, a fuel truck from a local distributor handles this job. But the twin 60-gallon tanks—carrying diesel fuel and gasoline—are a supplementary supply. A hand pump is located over each tank.

The company mechanic generally works in the field, but since this job was close to the home office, repairs were made in the base maintenance garage. While Hank Michaelis is repairing the engine of a sweeper, the engine from a shoulder machine—not in use at the time—keeps the sweeper in operation.

other maintenance checks were made, and the oiler always kept an eye out for impending mechanical failures.

The foreman takes the plant

Keeping the company's 13-year-old batch-type plant running over 95 per cent of the time also required plenty of attention to the "little things." Each evening, for about half an hour after the plant shut down, the crew went to work with their grease guns. Any mechanical things that looked as if they might cause trouble were taken care of.

Bill Mins, the foreman of the company-built crusher, also realizes that the old rollers and jaws won't keep chomping up the rocks unless the machinery is well cared for. Assisted by another man in the crew, he went over the equipment each evening—greasing the fittings, cleaning the air cleaner on the Cat D13000 diesel engine that powers the plant, and performing many other maintenance checks.

The road crew took good care of its Barber-Greene finisher. The men washed it down with diesel fuel in the evening and greased and fueled it each morning before work. The roller operators greased their own rigs.

For the most part, Mobil products were used for the lubrication. On the job were five different types of greases, one high-detergent motor oil, and one low-detergent oil.

Records

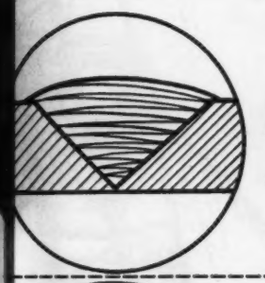
Equipment cards are kept in the main office, and entries are made on them to indicate a major overhaul. No records are kept of field maintenance or lubrication, or on the downtime of the equipment. The company does have an indirect record that shows downtime on trucks. The availability of a certain truck can be checked by looking over the drivers' time cards.

It has been the experience of superintendent Lloyd Schraeder that too many records and check lists can bog a job down. An oiler can spend more time making checks on a sheet of paper than he does greasing the trucks. And a check on a piece of paper doesn't necessarily mean that the fitting has been greased.

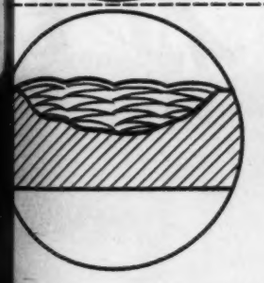
Taking the spotlight off the man

STOODY NICKEL MANGANESE

WITH IRON POWDER COATING



FOR JOINING



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FEATURES:

Stable arc – No popping	Freedom from cracks
Easy re-strike	No porosity
Fast deposition	Easy slag removal
Low spatter	Clean deposits

Cores are uniformly straight and coatings perfectly concentric—insuring a stable, smooth running arc.

Ask your Stoody Dealer for test samples...check speed and welding qualities, *test performance against every other manganese electrode you've ever used...* you'll find Stoody Nickel Manganese provides something *new* and *needed* in the industry!

PHYSICAL PROPERTIES:

(Based on tests by independent laboratory)

	DC Straight Polarity	DC Reverse Polarity
Tensile Strength	119,000 psi	111,000 psi
Yield Strength	67,000 psi	66,000 psi
Elongation in 2"	55%	37.5%

Hardness—Single pass on manganese steel; as deposited—15 Rc, as work-hardened—48 Rc. Two passes on manganese steel; as deposited—18 Rc, as work-hardened—48 Rc.

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STOODY COMPANY

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Whittier, Calif.

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(*Continued from preceding page*)

with the grease gun, the job itself had some unusual aspects. Natural gas was used to fire the Hetherington & Berner dryer in the plant.

Bradbury finds that the butane heat is no more expensive than oil. And it is much cleaner. No soot from the stack rains down on the men and the equipment. The butane installation also eliminates the need for a forced draft in the dryer.

The butane is stored under pressure in three 6,000-gallon tanks located several hundred feet away from the plant. An underground line feeds the gas to four burner heads at the mouth of the dryer. Valves at the dryer regulate the intensity of the heat.

The pressure in the tanks depends on the outside temperature. During hot weather, when the pressure in the tanks is about 150 psi, there is no need for a pump on the system. During cold weather, a pump is necessary to maintain the pressure for supplying the burner heads. The tanks hold enough gas to keep the dryer in operation for about three days. When the job is completed, each tank is loaded on a semitrailer and hauled to the next project.

Rubber tires knit surface

On the road, the highway department was trying out a new method of rolling the hot asphalt. A Rosco rubber-tire roller was being used as the first roller behind the finishing machine. The nine wheels of the roller tended to knit the material, reducing the number of voids in the surface. Following the rubber-tire roller were a Huber 5 to 8-ton tandem roller and a Huber 8 to 12-ton tandem.

Said road foreman, Sig Hultman, "We used to tear our hair when a driver ran his car over the fresh asphalt. Now, we're doing the same thing, intentionally. It looks crazy, but I believe it's getting us a better road."

The South Dakota State Highway Commission has already started to write the specification into some of their contracts.

Lloyd Schraeder superintended the job for P. A. Bradbury Construction Co. His crews were headed by Sig Hultman, road foreman; Bill Mins, crusher foreman; Everett Simon, plant foreman. Lloyd Walker was the oiler on the job, and Hank Michaelis was the mechanic.

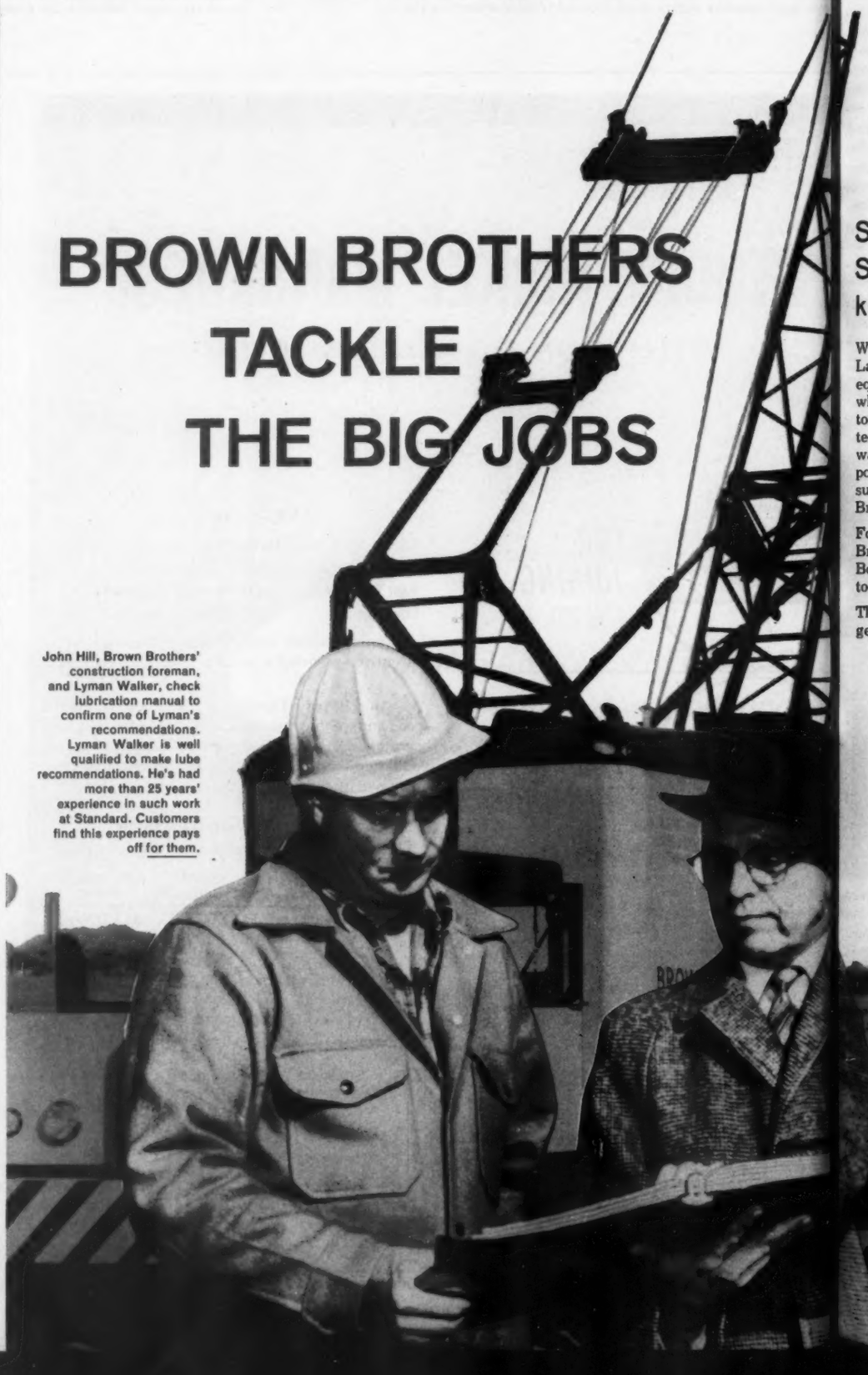
On the job for the highway commission were R. W. Owens, district engineer; N. R. Molseed, resident engineer; and David Schwall, chief inspector. THE END

Clark Equipment opens Latin American plant

■ Clark Equipment International, C. A., a wholly owned subsidiary of Clark Equipment Co., Buchanan, Mich., has opened an automotive transmission plant at Valinhos, Brazil. The $4½ million plant will produce transmissions, differentials, gears, and other automotive components for South American-built products of Clark and other firms.

OVER THE SWIRLING WATERS of the N agara River, just upstream from the Fall a stiffleg derrick works to edge a 96-foo long, 59-ton girder to temporary falsework for the American Rapids Bridge Bethlehem Steel Co., Bethlehem, Pa., handling erection of the bridge. Can levering will continue to Goat Island form the arched main span of 450 fee making it the longest continuous plat girder span in the Western Hemisphere The bridge's two 70-foot anchor spans e tend the length of the bridge to 590 feet.

BROWN BROTHERS TACKLE THE BIG JOBS



John Hill, Brown Brothers' construction foreman, and Lyman Walker, check lubrication manual to confirm one of Lyman's recommendations. Lyman Walker is well qualified to make lube recommendations. He's had more than 25 years' experience in such work at Standard. Customers find this experience pays off for them.

A John W. Stang wellpoint system cut costs by allowing work to be done in the dry for the Santa Ana River flood-control project in California.

Wellpoint system helps halve work time on flood-control job

■ A $3 million contract completed in six months—half the contract schedule—is the record on the new Santa Ana River flood-control project. The job, located near Newport, Calif., consisted of channel improvements starting from the mouth of the river and extending approximately five miles upstream.

A great deal of the job record can be attributed to a wellpoint dewatering system furnished by the John W. Stang Corp., Bell, Calif., that permitted work in the dry for practically the entire project. Originally, the wellpoint system was to be used only in two seasons for the placement of the concrete structures. However, as the job progressed, costs indicated that it would be cheaper to use the dewatering system through the entire project.

The over-all job consisted of 25,500 feet of main channel, requiring a combination of concrete side slope; riprap; and underpinning of two bridges—one for U. S. 101 and the other a railroad bridge. In addition to the main river channel, two side channels were constructed parallel to the river. A high-water table existed for the first 3,000 feet of the job in silty sand with some gravel.

The first phase of dewatering began behind a sand cofferdam, approximately 1,000 feet upstream from the ocean, to allow for concreting operations. The second phase was extended downstream to within 500 feet of the surf line, and a sand cofferdam was again used. The water lowering was required from elevation plus 4 to at least elevation minus 8.

Stone & Webster names Canadian office head

Lee Carter has been named to head the new office at 917 Lancaster Bldg., Calgary, Alberta, Canada, opened by Stone & Webster Canada Ltd., an affiliate of Stone & Webster Engineering Corp., Boston and New York City. Carter has worked on the company's design and process engineering of petroleum refineries and chemical plants in the U. S., Great Britain, and Italy.

Euclid service schools to be held in West

■ The Service Training Department of Euclid Division, General Motors Corp., Cleveland, will utilize GMC training centers in Portland, Ore., and Denver to conduct its courses. The courses cover the latest techniques of preventive maintenance, trouble shooting, repair, and rebuilding of the major components used on all Euclid earthmovers. Courses are open to all Euclid owners, operators, and service personnel from those areas.

The Portland school will be held from January 18 to February 27; in Denver, it will be from March 7 through April 29. Complete schedules and detailed information can be obtained from Euclid dealers.

←For more facts, circle No. 292

STANOLUBE Motor Oils and Standard Oil technical service keep equipment on the move

When Brown Brothers Construction Company, Lansing, Michigan, tackles a job, they have the equipment to do the work. Likewise, they have what's needed to maintain equipment on the toughest jobs. They use Standard Oil products and technical service. To move equipment on highways, the contractor employs a 60-ton trailer unit powered by a 300 hp GM diesel, one of the largest such units in service in Michigan. For moving dirt, Brown Brothers use Twin-Power Euclid Scrapers.

For lubrication of all of its equipment, Brown Brothers relies on STANOLUBE Motor Oils. Why? Because these motor oils are especially formulated to take the heavy duty service imposed on them.

The technical service needed to see that equipment gets the lubrication required is provided by Standard Oil lubrication specialist Lyman Walker. Lyman has more than 25 years' experience helping customers keep equipment in service and eliminating down-time due to lubrication failure.

Get this kind of help on your job. There's a Standard Oil lubrication specialist near you anywhere in the 15 Midwest or Rocky Mountain states. Call him. Or contact **Standard Oil Company (Indiana), 910 South Michigan Avenue, Chicago 80, Illinois.**

Quick facts about

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- Made from highest quality base stock. Wax and unstable components removed.
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- Oxidation stability maintained and bearing corrosion controlled by special additives.
- Oil flow in all weather assured by exclusive pour-point depressant.

You expect more from STANDARD *and you get it!*

Avoid legal pitfalls

Unforeseen conditions on tunnel blasting

THE PROBLEM: *A contract with the United States to build an earth dam across a creek involved blasting a 710-foot-long tunnel through rock. The blasted area was to be 17 feet in diameter, and the finished bore after concrete lining was to be 13 feet. The U. S. Army Corps of Engineers had made test borings, but the contract contained standard provisions requiring bidders to investigate the site and learn everything possible about conditions to be encountered in performing the contract.*

The contractor thoroughly examined the nature of the rock wherever it was exposed and the logs of the Army Engineers' test borings. The logs indicated that, except for about 50 feet at each end of the tunnel, the rock covering would be relatively shallow and without seams in which clay or mud had accumulated. It was expected that because of the unweathered condition of the rock, it might better remain in place in the roof of the tunnel without vertical support when the tunnel was blasted through. The specifications, recognizing instability of the rock for 50 feet at either end of the tunnel, provided for inserting in those locations strong steel ribs, set 4 feet apart, with steel liner plates 1/8-inch thick on top of them.

Adverse conditions were encountered while the tunnel was being blasted, involving considerable excess fall of rock. The contractor requested authority to install steel ribs and liner plates throughout the entire length of the tunnel, the additional expense to be paid by the government. During ensuing correspondence for several months, the government repeatedly denied the permission requested by the contractor. After considerable delay, the contracting officer reversed his decision and conditionally permitted use of the contractor's design. The contractor installed permanent protection of the tunnel and completed the work. Did the government erroneously reject the contractor's application for additional compensation?

THE ANSWER: Yes. (Carlo Bianchi & Co., Inc. v. United States, 169 Fed. Supp. 514, decided by the United States Court of Claims.)

The Court of Claims rejected the government's claim that the contractor's difficulties were due to its own delay in lining the tunnel after it had been holed through.

The Court of Claims said: "The contract required the contractor to protect its workmen against harm from falling rocks, and to produce a safe, solid, usable tunnel. We think the government officials felt that they could save the government money and at the same time subject the government to no risk, by standing on the terms of the contract. If the temporary protection, which they insisted was sufficient, did not produce a good tunnel, the contractor was still obligated to produce a good tunnel, and the government could not lose by the experiment."

Strike delayed work

THE PROBLEM: *A municipal housing authority awarded construction to plaintiff, an employer of union labor. Demolition work was awarded to a contractor who usually used union labor, but did not on that particular job. The contract with plaintiff required the authority to coordinate the work of all prime contractors on the project. Plaintiff's employees struck, refusing to work on the same job with nonunion employees. Was the housing authority liable to plaintiff in damages, on a theory that organized labor should have been required on all phases of the work?*

THE ANSWER: No. (Anthony P. Miller, Inc., v. Wilmington Housing Au-

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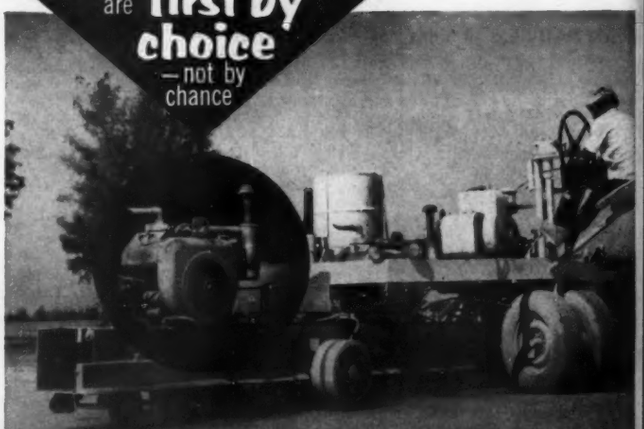

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The number of Wisconsins used in construction is apt to make you wonder whether anyone else makes engines in the 3- to 56-hp class. They do — but not like Wisconsin builds them. And leading builders of construction equipment know it.

This OEM preference is based on the all-around quality and dependability of Wisconsin engines — not price. Builders know that Wisconsin power protects the service reputation of their machines as well as your continued good-will.

Heavy-duty, precision-fitted engine construction assures smooth, dependable power and minimizes wear. Basic high torque provides load-lugging power that enables the engine to slug through sudden shock loads without stalling or damage — and keeps men and machines working.

Air-cooling eliminates freeze-ups and dry-ups. You won't need water or antifreeze. You just start the engine — whether it's 35° F. below zero or 140° F. above — and let it run!

Specify Wisconsin air-cooled engines on the equipment you buy. Sizes from 3- to 56-hp. — single,- two-, and V-type four-cylinder models — with manual or electric starting. Convenient, expert service available through more than 2000 Authorized Service Stations. Send for Bulletin S-249. Write Dept. C-20.

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MILWAUKEE 46, WISCONSIN

World's Largest Builders of Heavy-Duty Air-Cooled Engines

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thority, 165 Fed. Supp. 275, decided by the United States District Court for the District of Delaware.)

The judge followed decisions by the courts in different states. He approvingly quoted a declaration by the Ohio Supreme Court, rejecting argument that costly delays and added expenses on public contracts could be avoided by awarding all work to contractors employing union labor. If such discretion were permitted, laws requiring awards to the lowest bidder would be futile, and the public authority would be helpless.

Protests must be prompt

THE PROBLEM: *A subcontractor denied that it was its duty to remove rock and ledges from the bottom of a channel it had dredged, but it did the work without protest and made no claim for extra compensation until more than a year after the job was completed. Was the subcontractor entitled to extra compensation?*

THE ANSWER: No. (United States Dredging Co. v. United States, 81 Fed. 2d, 118, decided by the United States Circuit Court of Appeals, Sixth Circuit.)

If the subcontractor felt that the contractor's interpretation of the contract was wrong, it had the right to refuse to accede to the interpretation and to sue for the amount due it for work already performed. Instead of pursuing that course, it yielded and voluntarily did the work. Whatever its purposes might have been, it certainly did nothing to put the contractor on notice that it expected to be paid beyond the contract price. Its secret intention to charge extra for the work, if it had such intention, cannot give rise to an implied promise on the part of the contractor to pay, for an implied promise must arise from a purpose made manifest to and acquiesced in by the one to whom it is charged.

The court's ruling applies even if a particular contract does not require any formal notice of protest within a certain time. Compliance with such a requirement is imperative if the contract specifically requires notice.

Insufficient warning

THE PROBLEM: *A highway contractor removed a bridge over a canal, as required by contract. But public travel was permitted over a detour. At one approach to the removed bridge an amber light was installed to warn travelers. Foggy conditions that prevailed made flares insufficient. But only flares and a barricade were installed at the other approach. A motorist, not discovering that the bridge was out until too late, was injured at that approach. Was the contractor liable?*

THE ANSWER: Yes. (White v. Dickerson, Inc., 105 S. E. 2d 5, decided by the North Carolina Supreme Court.)

The court said that the fact that the contract required removal of the bridge did not excuse the contractor from maintaining an efficient warning for fog conditions. The flickering torch lights were not adequate.

State and federal labor law conflict

THE PROBLEM: *Plaintiff had state highway construction contracts aggregating $7 million. Admittedly the project involved interstate commerce within the provisions of the National Labor Relations Act, because part of the construction involved U. S. 12, the principal Detroit-Chicago route. Plaintiff's 14 union carpenters struck and the union established a picket line at the construction site that resulted in work stoppage by plaintiff's other employees. Did the state courts have jurisdiction of a suit to enjoin the strike accompanied by peaceful picketing and display of placards?*

THE ANSWER: No. (Davidson v. Michigan State Carpenters Council, 97 N.W. 2d 11, decided by the Michigan Supreme Court.)

The court decided that the charges fell within the exclusive jurisdiction of the National Labor Relations Board.

Measurement of riprap

THE PROBLEM: *A contract with the U. S. Army Corps of Engineers covered placing a blanket on a dam embankment under construction. Specifications provided:*

"Placing riprap. The placing of riprap on the upstream face of the dam includes the placing of the riprap and the sand and gravel blanket. The sand and gravel blanket and the riprap may be dumped and spread by mechanical equipment and arranged by hand, if necessary, to form a compact layer conforming to the lines and grades indicated on the drawings. Placement shall be kept within the following tolerances: sand and gravel blanket, 2 inches plus or minus; riprap, 6 inches plus only.

"Measurement. Material used in all work covered by this section will be measured in its final position. The

Edited by A. L. H. STREET
Attorney-at-Law

These brief extracts of court decisions may aid you. Local ordinances or state laws may alter conditions in your community. If in doubt consult your own attorney.

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CF&I STEEL

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volume will be computed by multiplying the surface area by the actual average depth of each layer within the neat lines as indicated on the drawings. No allowance will be made for misplaced materials."

The contract plans included a cross-section drawing with lines showing the sand and gravel blanket to be 9 inches thick and the layer of rock riprap to be 18 inches thick. Applying the language of the specifications relating to tolerances to the thicknesses shown on the drawings, the contractor could have complied with the contract by making the sand and gravel blanket any thickness from 7 to 11 inches—that is, 9 inches with a tolerance of 2 inches plus or minus, and by making the layer of rock riprap any thickness from 18 to 24 inches—that is, 18 inches with a tolerance of 6 inches plus only.

As the work was actually done, the sand and gravel blanket was laid with a uniform thickness of approximately 9 inches. The layer of riprap, as placed, was on the average considerably more than 18 inches thick. The contractor claimed that it averaged more than 22 inches thick, involving 796 cubic yards in excess of what would have been required had the average been 18 inches. Was the contractor entitled to be paid for the yardage actually placed, as distinguished from what he would have been paid if the riprap layer had been held to a uniform thickness of 18 inches?

THE ANSWER: Yes. (Wunderlich Contracting Co. v. United States, 166 Fed. Supp. 741, decided by the United States Court of Claims.)

The court said that because the contract was worded by the U. S. Army Corps of Engineers, any ambiguity as to its meaning should be settled in favor of the contractor.

Liability for fire damage

THE PROBLEM: *The prime contractor on a county highway construction job sublet the work of clearing the site. In burning brush, the subcontractor's employees negligently caused the fire to spread to adjacent premises and destroy a church building. When sued by the church trustees, was the subcontractor entitled to have the prime contractor brought into the suit as a co-defendant on a theory that the prime contractor was jointly liable for the damage?*

THE ANSWER: No. (Bowyer & Johnson Construction Co. v. White, 2[illegible] Fed. 2d 482, decided by the United States Court of Appeals, Fifth Circuit, on an appeal from a decision of the United States District Court for the Northern District of Mississippi.)

The Court of Appeals decided: The evidence sustained a finding that the church building was destroyed by negligent failure of the subcontractor to properly attend to the small fire it had intentionally set in cleaning up right-of-way trash, or in completely putting out the fire after it had burned through an adjacent cemetery and subcontractor thought it had been extinguished.

A general clause in the prime contract, imposing responsibility on the contractor "for all loss or damage arising out of the nature of the work" did not impose on the contractor any greater liability to a third person for the acts of the subcontractor than would be imposed on the contractor directly. Such clause was not intended to impose absolute liability on the contractor for injuries and damages sustained by members of the public, regardless of negligence of the contractor. Mere likelihood that the subcontractor, in doing the work of grubbing and clearing in connection with highway construction, might use some fire in the work, did not make the contractor liable.

Contractor, sub liable

THE PROBLEM: *Employees of a paving subcontractor left a paver on part of a road open to travel. Were the general contractor and the subcontractor jointly liable for injury to motorists?*

THE ANSWER: Yes. (Osgood v. D. W. Winkelman Co., 87 N. Y. Supp. 2[illegible] 110, decided by the Appellate Division of the New York Supreme Court, Appellate Division, Third Department.)

The prime contract was so worded as to make the contractor liable for negligent injury to persons or property during progress of the work, and required that barricades and warning signs be erected to protect travelers.

The court decided the evidence showed that the paving subcontractor negligently left the unlighted paver on the highway, but the prime contractor was also negligent in failing to properly supervise the paving work by seeing that it was carefully done to avoid danger to the traveling public. This duty was important because the paving subcontractor was merely engaged to complete the top course of the road and did not assume the general contractor's obligation to maintain proper safeguards.

The respective negligent acts of the prime contractor and the subcontractor were so interrelated that the former could not require the subcontractor to reimburse it for damages awarded against it in favor of the motorists.

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Faster work cycles with countershaft brake and longer life with pressure filtration system

Eight Allis-Chalmers TS-260 Scrapers with Fuller off-highway '1220 Series Transmissions are boosting profits for Ben Haskins Construction Company on Oklahoma highway projects. All 8 of Haskins' '1220 Series Transmissions are equipped with Air-Powered Countershaft Inertia Brakes and Pressure Filtration Systems for the gear oil.

President Ben Haskins says, "Fuller '1220 Transmissions have helped make our operation more profitable. They're trouble-free. The transmission countershaft inertia brake permits quick, easy upshifts without double clutching. Faster shifting gives us faster work cycles . . . the pressure filtration system for the gear oil prolongs gear and bearing life . . . I'll insist on both the brake and the pressure filtration system when I buy equipment in the future."

For long life, easy shifting and positive lubrication in your scraper operations, specify Fuller off-highway Transmissions which include the countershaft inertia brake and pressure lubrication and filtration systems as standard equipment. Ask your dealer about these new features designed to provide *you* with a better margin of profit.

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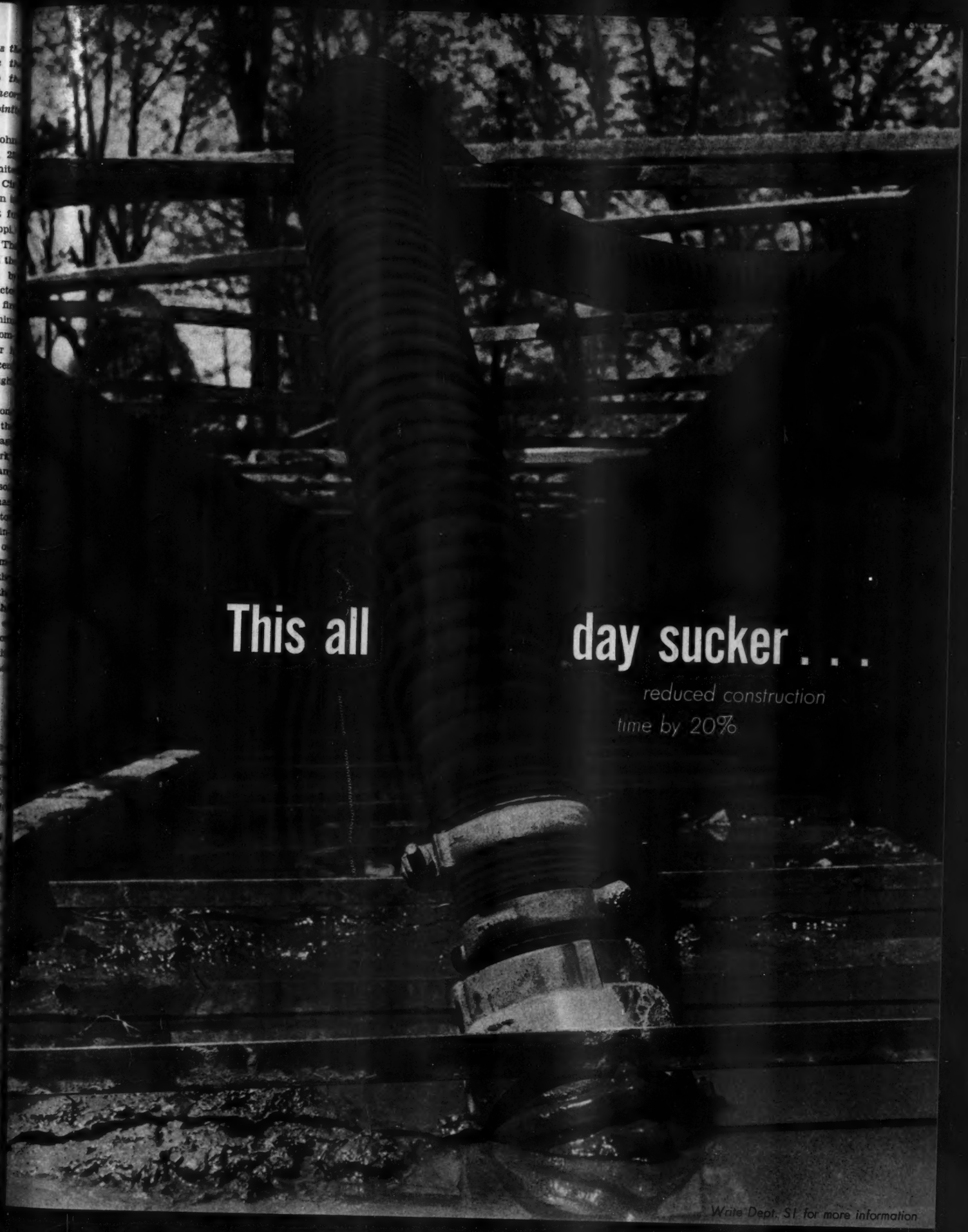
For more Acme facts, circle No. 29[illegible]



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Floating equipment works efficien

Contractor builds special gantry to position 98-foot prestressed girders

by TONY MAVROUDIS, field editor

Good use of floating rigs made for maximum efficiency during work on a 2-bridge 3-mile causeway between Miami and Miami Beach, Fla. The floating Butler plant turns out mix for a pier column; a Link-Belt crane handles the Gar-Bro 1-yard bucket. In the background, a Bucyrus-Erie crane loads aggregate from the material barge to the plant barge. The pier foundation consists of a capped pile cluster under each of four pier columns.

A new 3.21-mile crossing, the 36th Street Causeway across Biscayne Bay, forms an important new link between Miami and Miami Beach, Fla. The actual water crossing, completed this month under a $3,500,000 contract by Heavy Constructors, Inc., Miami and Ft. Lauderdale, spans the Intracoastal Waterway and east channel. These navigable waterways are crossed by two bridges separated and flanked by earth fills.

Major bridges

Bridge A, spanning the Intracoastal Waterway, has sixteen 65-foot spans; ten 98-foot spans; and one 130-foot steel-girder span over the waterway. This span has a vertical clearance of 55 feet. Bridge B, across the east channel, has sixteen 65-foot spans and one 98-foot channel span. All spans, except the one with 130-foot girders, were formed with 14 lines of prestressed-concrete girders.

The 65-foot girders, measuring 16× 48 inches, weigh about 17 tons, while the 98-foot girders weigh 42 tons. These girders are 54 inches deep, with a top flange of 20 inches and a bottom flange 26 inches wide.

Special gantry

Heavy Constructors built a special gantry to position the 98-foot prestressed girders, rather than attempting to lift the heavy sections with floating rigs. The gantry consists of five 20-foot crane-boom sections laid end to end between two carriages, which ride on wide-flange beams resting on the pier caps.

These beam sections were tied around the caps with yokes and were fitted with knee bracing to support a cantilever. Prestressed-concrete girders were barged to the site and positioned under the cantilever. The gantry simply rode out on the cantilevers, picked up a girder, and placed it on the pier caps of the span. The boom sections making up the gantry were sway-braced, and each carriage was equipped with a Chrysler-powered Parkersburg hoist. Lifts were handled by the hoists, while manual winches moved the gantry transversely.

After 14 girders were placed for a span, a barge-mounted derrick and crane were used to lift the gantry, move one of the wide-flange rails ahead, and reposition the gantry for the adjacent 98-foot span.

All the 65-foot spans, consisting of the 17-ton prestressed girders, were erected with the floating Wiley Whirley. This rig also erected the ten lines of built-up steel-plate girders, weighing about 25 tons each, for the 130-foot channel span. Each of the two major structures was built in

Harold C. Scholtz
Manager
TOM JOHNSTON GRAVEL CO.
Ferrysburg, Michigan

"The Twin Disc Torque Converter Drive is ideal for our barge-loading operation. It makes for faster production and lower maintenance costs. The crane operator likes the converter too; it lets him 'feel' the load for control and safety."

This Manitowoc Model 3000 Crane is used to load 600-ton barges on Lake Michigan. Equipped with a Continental SD-802 Engine and a Twin Disc Three-Stage Torque Converter, it averages 3000 cubic yards of gravel per day.

Ernie Bruns
Owner
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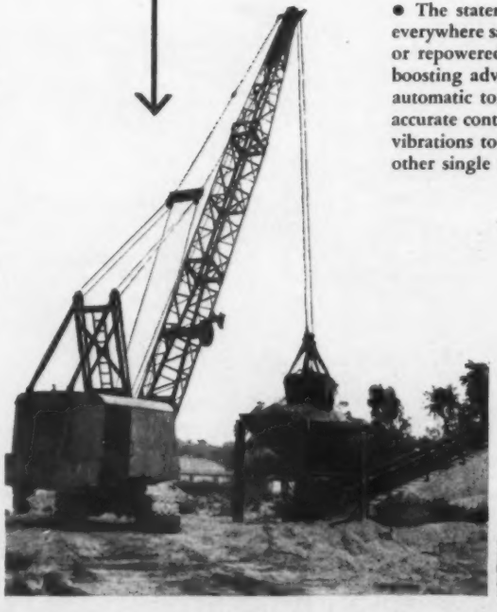
"I'd say a torque converter makes the shovel operator's job twice as easy. Picking up heavy loads is smooth and effortless, and there are no stalls or shocks even in the roughest rock."

On this road building project near Ironton, Ohio, Bruns' Marion 111-M Shovel with Cummins Engine loaded more than a million yards of blasted rock in twelve months. A Twin Disc Torque Converter helped make this outstanding performance possible.

SOLD on torque

● The statements quoted here are typical of what construction men everywhere say about Twin Disc Torque Converter Drive. On your new or repowered machines, a torque converter provides plenty of profit-boosting advantages: elimination of engine lugging and stalling . . . automatic torque multiplication to match load demands . . . smooth, accurate control under all load conditions . . . absorption of shocks and vibrations to safeguard engines, cables and turntable mechanisms. No other single feature adds so much in productivity or long-life service.



TWIN DISC CLUTCH COMPANY, RACINE,

causeway project

similar manner, except for the span over the east channel. Here, 98-foot prestressed girders were used instead of steel sections.

Bridge piers

Over 48,000 linear feet of 20-inch-square prestressed piles, ranging in lengths from 30 to 65 feet, was driven to a 60-ton bearing for the bridge piers. The driving job was handled by Vulcan O and McKiernan-Terry S-8 hammers on a contractor-built 45-ton floating derrick and the 45-ton Wiley Whirley. The number of piles per pier column varied from 6 to 10, and each cluster was capped with a 4-foot-thick cap. The end bents for each of the structures were built with a single row of 16 piles and simply capped.

Precast-concrete struts, 19 feet long, 2 feet 6 inches wide, and 4 feet 6 inches deep, were used to connect the bases of the four pier columns over the pile caps. For each of the 98-foot spans, the precast struts were also placed at elevation plus 24.5 feet.

Two sets of prefabricated metal-backed plywood forms were used to form the pier columns. One standard set was used to form the columns beneath the plus 24.5-foot strut elevation of the 98-foot spans, since all these had equal heights. The other set of forms was used to pour the pier columns for the 65-foot span as well as the top sections of columns for the 98-foot span. This second set required some alterations because of the varying column heights.

The pier cap was then formed by a monolithic pour in prefabricated forms 84 feet long. The height of the pier cap varied from 7½ to 6 feet.

A floating service station supplied the batch plant. The barge carries four 2,000-gallon water tanks, a 400-barrel cement silo, two 2,000 and five 550-gallon tanks for diesel fuel and gasoline. Gulf Oil Corp. made deliveries to the barge, eliminating the need of transferring fuels from storage tanks on shore.

Floating batch plant

To facilitate handling of the 25,000 cubic yards of concrete required for caps and piers, Heavy Constructors equipped one barge as a floating service station and one as a floating batch plant.

The service barge was equipped with four 2,000-gallon water tanks for the fresh water required for the concrete mix, a 400-barrel cement silo, two 2,000-gallon and two 550-gallon tanks for transporting Dieselect fuel, and three 550-gallon tanks for Gulf gasoline. All petroleum products, including form oil, were furnished by Gulf Oil Corp. on contract.

The second barge was equipped with a Butler batch plant with two tilting-type Rex 4-yard mixers, a Link-Belt K-375 crane powered by a Cat diesel engine, an Ingersoll-Rand Gyro-Flo air compressor to supply air to the plant, and generating equipment to provide electrical power. The plant produced concrete at the rate of 22 cubic yards per hour.

Concrete placement was done by the Link-Belt crane equipped with a Gar-Bro 1-cubic-yard concrete bucket.

Aggregates were handled in a typical manner; they were floated to the plant on large material barges. A second crane on the plant barge, a Bucyrus-Erie 34-B, transferred the aggregates to the plant.

Fill construction

Separating the two major structures is an 8,598-foot-long earth fill to carry the 4-lane traffic. Over 3 million cubic yards of hydraulic fill was required for this fill and man-made islands near both shore lines. These end islands support on and off

John C. Hickey
General Superintendent
BAKER & HICKEY
Columbus, Ohio

"A torque converter gives the crane operator perfect control. He has at his command the exact speed ratio needed to 'inch' or hold the machine under full power. Heaviest loads can be spotted exactly without worrying about jerk and sway."

Baker & Hickey's 25-ton Lima Model 44 Crane features a 65' open-throat boom. It gets smooth, efficient performance from its 150 hp Cummins JBIS Engine with a Twin Disc Single-Stage Torque Converter.

James W. Smith
Superintendent
LAYNE INC. OF FLORIDA
Hallandale, Florida

"A torque converter is a must in coral rock digging. A straight mechanical drive couldn't take the punishment. The converter not only takes the shock off cables and power train, but gives us the torque increase we need to go through hardest rock."

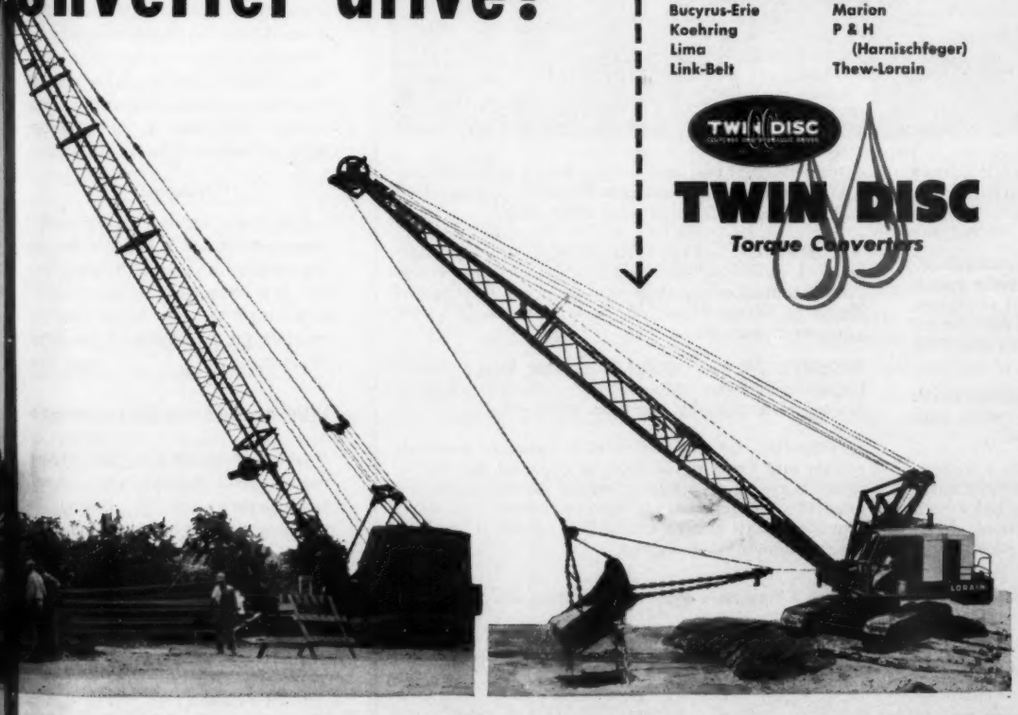
This Lorain 85-A Dragline powered by a Cat D337 Series F Engine, is excavating a canal for Layne's $4 million waterfront housing project. A Twin Disc Three-Stage Torque Converter provides extra torque to come through hard cap rock.

All these shovel and crane manufacturers offer Twin Disc Torque Converter Drive as standard or optional equipment . . .

American Hoist	Manitowoc
Bucyrus-Erie	Marion
Koehring	P & H
Lima	(Harnischfeger)
Link-Belt	Thew-Lorain

onverter drive!

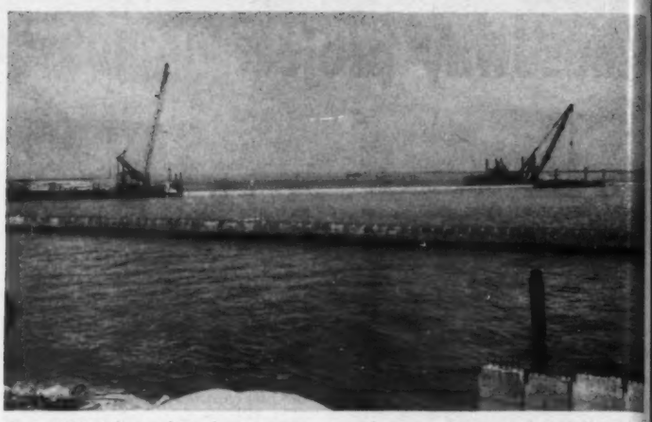
TWIN DISC
Torque Converters



YDRAULIC DIVISION, ROCKFORD, ILLINOIS

For more facts, use Request Card at page 18 and circle No. 298

A specially built gantry, riding on wide-flange beams cantilevered beyond the pier caps, picks up a 98-foot-long 42-ton prestressed girder for a span in one of the two causeway bridges. Girders are raised by hoist, moved transversely by a manual winch, and positioned on the pier caps.



Over 180,000 linear feet of concrete tongue-and-groove sheeting is being driven to enclose some 5½ miles of earth fill. The barge-mounted crane, left, uses a special template to position the sheeting. The floating derrick, right, positions another template used to drive anchor tie-back piles.

100% CONTROL OF EVERY OPERATION
IS HERE IN CLEVELAND TRENCHERS

WHEEL SPEEDS: big engine develops 50 HP at only 1250 RPM, drives through main transmission to digging wheel differential; operator has choice of 4 forward wheel speeds, 1¼ to 8 RPM, plus reverse.

CRAWLER TRANSMISSION: this famous Cleveland-exclusive feature provides 12 individual crawler speeds for *each* of 4 wheel speeds, allows operator to choose, from over 30 *usable* combinations of wheel and crawler speeds, the *right* combination of power and speed for every digging condition.

HYDRAULIC STEERING: big 16" x 3" internal hydraulic brakes, controlled by suspended-type foot pedals, provide easy steering and maneuvering of the...

WORLD'S FINEST TRENCHER CRAWLERS: a tremendously long-lived, stable, trouble-free, easy rolling track; 1000-hour lubricated, it employs double-flanged wheels rollers and sprockets with teeth widely spaced, drives on each end of 1½-inch hardened crawler pins.

BOOM HOIST: two easy-acting levers independently control raising and lowering each end of digging wheel boom through full height and depth range.

V CONVEYOR SPEED AND DIRECTION: dual, independent, pulley-enclosed hydraulic drives give operator instant control of conveyor belt speed and direction of discharge, eliminate need of conveyor chains, sprockets, hung-on motors, etc.

V CONVEYOR POSITIONING: operator shifts conveyor hydraulically from side to side, placing spoil wherever desired while digging past trees, poles, etc.

HYDRAULIC CRUMBING SHOE: operator controls raising and lowering of shoe, as required, for lifting or setting digging wheel at walks, driveways, underground obstructions, etc.—an exclusive Cleveland feature which makes crumbing practical even in obstruction-crowded digging.

Get the complete story on Cleveland J Trenchers from your distributor

Good Everywhere

The CLEVELAND TRENCHER Co.

20100 St. Clair Avenue • Cleveland 17, Ohio

For more facts, use Request Card at page 18 and circle No. 299

(Continued from preceding page)

ramps in addition to the main-line traffic. Arundel Corp., San Gabriel, Calif., handled the dredging under a subcontract.

These permanent fills are bulkheaded to prevent erosion from rain and wave action. Some 180,000 linear feet of 8, 10, and 12-inch-thick concrete sheet piling was driven for the bulkhead. The 30-inch-wide concrete tongue-and-groove sheeting, driven in lengths from 8 to 26 feet, forms a protective wall totaling 5½ miles in length. The sheeting was capped and supported by tie-backs 18 feet inside the bulkhead. Eighteen-inch-square prestressed, battered piling was driven and connected to the bulkhead cap by two 6×8-inch prestressed-concrete anchor beams. Piles were driven to a 16-ton bearing.

Heavy Constructors used a specially built, floating steel template to position the sheeting during driving. A minimum penetration of 15 feet into the bay bottom was obtained. To form the bulkhead cap, the contractor used hollow box-section steel wales measuring 12×14 inches to support the forms. These not only supported the forms but eased the stripping operation. The wales simply dropped into the water and, being watertight, were floated easily over to the adjacent bulkhead section to be capped.

Personnel

J. R. Bailey was the general superintendent; Milton E. Cannon the job superintendent; and J. B. Rice, Jr., the field engineer for Heavy Constructors. H. M. Post is the resident engineer for the Florida State Road Department. THE END

L-W names credit manager

■ Lon E. Bechtold has been named central credit manager for LeTourneau-Westinghouse Co., Peoria, Ill. He succeeds John McMullen, who resigned to accept the post of general manager with an L-W distributor.

Bechtold will handle liaison between the company and the network of independent distributor organizations, which sell and service the L-W line of earthmoving, grading, and heavy hauling equipment in the Central states.

Talcott expands services to Midwest distributors

■ James Talcott, Inc., New York City finance company, is expanding the facilities available to construction machinery distributors in Illinois, Indiana, Iowa, Minnesota, Missouri, and Wisconsin. In addition to its old dealers in the Midwest, the Chicago Instalment Division of Talcott will serve customers of the Credit-America Division of New York, New York City.

Russ Donahue, assistant secretary, will be in charge of business development. John Hann will be transferred from the Credit-America Division to serve as one of the new business representatives. The specialized instalment credit department will be under the supervision of Gene Roth.

HRB report on highways, economic development

■ "Highways and Economic Development" is the subject of Bulletin 227 from the Highway Research Board, 2101 Constitution Ave., Washington 25, D. C.

Papers give data on changes in land use and value along Atlanta's expressways; Massachusetts Route 128 impact study; and land value impacts of expressways in Dallas, Houston, and San Antonio. The last three papers report on approaches to three highway impact problems; some effects of limited-access highways on adjacent land use; and the land-use map versus the land-value map. Graphs and maps abound in the bulletin. The cost is $1.60 a copy.

Caterpillar film on tractor transmissions

■ An 11-minute sound film introducing and illustrating a new concept in big tractor power-shift transmissions is available through local dealers of Caterpillar Tractor Co., Peoria, Ill.

The film covers on-the-job performance of power-shift tractors in various phases of earthmoving work, pinpointing the cycle-time reduction possible through one-lever shifting for forward and reverse. A detailed explanation is given of how the transmission arrangement functions, and the film shows how power is partially diverted through the torque converter and also sent directly to the transmission from the engine.

Duff-Norton expands divisions, erects plants

■ Duff-Norton Co., Pittsburgh, plans to expand two divisions—the Jack Division in Pittsburgh, and the Coffing Hoist Division in Danville, Ill.—and transfer those operations to a new plant in Charlotte, N. C.

The new 168,000-square-foot plant will measure 320×480 feet and provide 153,000 square feet of manufacturing area and 15,000 square feet of office space. It will be of steel frame and brick and will be situated on a 26-acre section of a 2,266-acre tract. The plant will be completed by the middle of this year.

GRAVEL for the earth-fill Hillscreek Dam near Oakridge, Ore., is loaded out to hauling rigs by a Manitowoc Model 4500 dragline. About 10 million yards of material is required for the U. S. Army Corps of Engineers project, which is scheduled for completion by January, 1961.

THE SIMPLICITY S-80 ASPHALT PLANT

LOWEST COST

PARTICULARLY ON 25,000 ton to 50,000 ton PROJECTS

Simplicity plants are more dependable . . . they last longer, require less men, maintenance and fuel . . . and they produce more and better asphalt paving mixtures, at less cost, than any other asphalt plant built by anyone, anywhere, at any time.

In 1953 Walter Richardson, Jr., (Interstate Construction Company) started in the plant mix asphalt business in Nashville, Tennessee, with a Simplicity asphalt plant. In six years his highly successful companies have acquired four Simplicity plants . . . three are Model S-80.

Why Simplicity Model S-80? Because he has proved . . . time after time . . . that S-80 produces at lowest cost on 25,000 to 50,000 ton projects where competitors must move to the job . . . and has further proved that it can meet and beat competition on considerably larger jobs. The S-80 plant can be dismantled, moved any distance and re-erected as fast and economically as any asphalt plant of its capacity on the market.

DEPENDABLE

THE SIMPLICITY SYSTEM CO.

CHATTANOOGA 6, TENNESSEE

For more facts, use Request Card at page 18 and circle No. 300

A steel-sided Alaska National Guard armory for a village unit of the Alaska Scout Battalions is one of 48 such structures being built in northern and western Alaska. Many of the construction sites are so remote that supplies had to be brought in by skin boats or dog sleds, or carried by the Eskimo men and women.

Getting to armory sites is toughest part of work on Alaskan National Guard projects

■ Getting building supplies to the construction sites of Alaska National Guard Scout armories was the hardest part of the project for Manson-Osberg Co., Seattle, contractor on this $1,050,600 job. Some of the sites are as widely separated as Chicago is from Boston or from New Orleans.

After supplies arrived at distribution centers at Bethel and Kotzebue, various means of transportation had to be devised. Skin boats came in handy getting supplies to the rocky beach of Little Diomede Island. The Eskimo boatmen are experts at landing supplies at that harborless island.

At another site, Eskimos used sled dogs to tow a cart loaded with supplies from the beach to the building site. At the village of St. Michael, women assisted their husbands in hauling the supplies up a steep slope. At a third village, supplies were carried by hand from the barge across a high-tide mud flat to shore, about half a mile away.

Some 48 armories are needed, and 80 per cent of the work was completed by late last year. Each measures 20 × 60 feet and contains 1,200 square feet of floor space. Each will be equipped with two space heaters and a small power generator. The work was done by Eskimo and Indian help under the direction of the contractor's carpenter foremen. All of the work was done under the supervision of the U. S. Army Engineer District, Alaska.

When the armories are not being used by the First and Second Alaska National Guard Scout Battalions for training purposes, they will be available as village meeting places.

MARVEL
SYNCLINAL FILTERS

FOR DEPENDABLE PROTECTION on all Hydraulic and other low pressure circulating systems

Designed to give more ACTIVE filtering area—MORE dependable protection—MORE productive operation before cleaning is necessary. *Meet J.I.C. Standards.*

A

A—Synclinal SUMP TYPE
CAPACITIES: 5—8—10—20—30—50—75 and 100 G.P.M.
PIPE SIZES: ¾"—1"—1¼"—1½"—2"—2½" and 3".
CONNECTIONS: Coupling—Male Nipple.
BY-PASS VALVE: Not available.

B—Synclinal LINE TYPE
CAPACITIES: 5—8—10—20—30—50—75 and 100 G.P.M.
PIPE SIZES: ¾"—1"—1¼"—1½"—2"—2½" and 3".
BY-PASS VALVE: Not available.
OPERATING PRESSURES: Up to 80 p.s.i.

C—Bonded LINE TYPE
CAPACITIES: 10—20—30—50 and 75 G.P.M.
PIPE SIZES: 1"—1¼"—1½"—2" and 2½".
BY-PASS VALVE: Available with or without.
OPERATING PRESSURE: Up to 250 p.s.i.
OPERATING TEMPERATURES up to 300° F.

B

D—IN-LINE FILTER
CAPACITIES: Up to 60 G.P.M.
PIPE SIZES: ¾"—1"—1¼" and 1½" (at both inlet and outlet).
BY-PASS VALVE: Available with or without.

E—Bonded SUMP TYPE
CAPACITIES: 10—20—30—50 and 75 G.P.M.
PIPE SIZES: 1"—1¼"—1½"—2" and 2½".
CONNECTIONS: Coupling—"O" Ring—Male Nipple.
BY-PASS VALVE: Available with or without.

F—Tandem SUMP TYPE
CAPACITIES: 10—16—20—40—60—100—150 and 200 G.P.M.
PIPE SIZES: ¾"—1"—1½"—1½"—2"—2½" and 3".
CONNECTIONS: Coupling—Male Nipple.
BY-PASS VALVE: Not available.

C

D

E

F

FILTERING MEDIA in all Marvel Filters is Monel wire cloth available in mesh sizes of 30-40-50-60-80-100-150 and 200 to meet your filtration requirement.
EASY TO CLEAN—All Marvel Filters are easy to clean. Line type units operate in any position and may be serviced without disturbing pipe connections.
OVER 900 O. E. M's. install Marvel Filters as Standard Equipment.

IMMEDIATE DELIVERY

For further information on a specific type filter—Write—wire or phone

MARVEL ENGINEERING COMPANY
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Phone: JUniper 8-6023

Please send me information on Marvel Filters as indicated: **(CE-1)**

☐ Hydraulic Oils ☐ Coolants ☐ Lubricants ☐ Fire Resistant Fluids
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"Get the Drop" on Wire Waste!

. . . and speed wire tying, too with the IDEAL TIE WIRE REEL

Independent, "on-the-job" comparison tests have proved the Ideal Tie Wire Reel can actually save you up to 33 per cent in wire, and speed tying by 25 to 30 per cent. Regardless of application—for rebars, metal lath, insulation fastening, and many other uses—the wire savings and increased tying efficiency provided by the Ideal Reel mean more profits for you. Handy, easily loaded wire coils are available in a full range of wires:

- Black Annealed • Monel
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The Ideal Tie Wire Reel is extremely versatile . . . right or left hand use . . . loads four times faster than any other reel . . . rewinds unused wire . . . eliminates loose wire ends, kinking, and tangling . . . highest quality construction stands up under years and years of hardest usage.

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IDEAL TIE WIRE REELS

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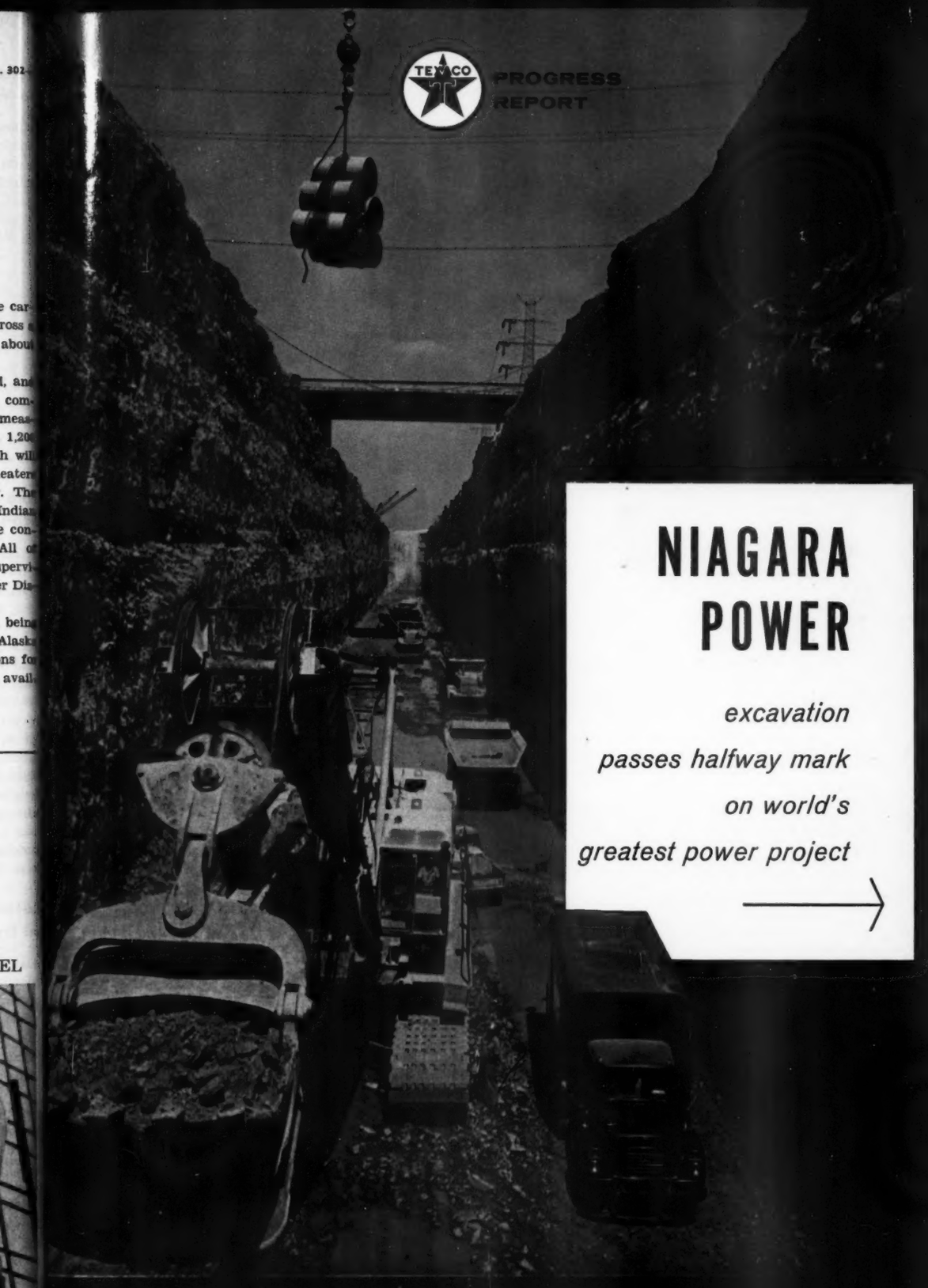
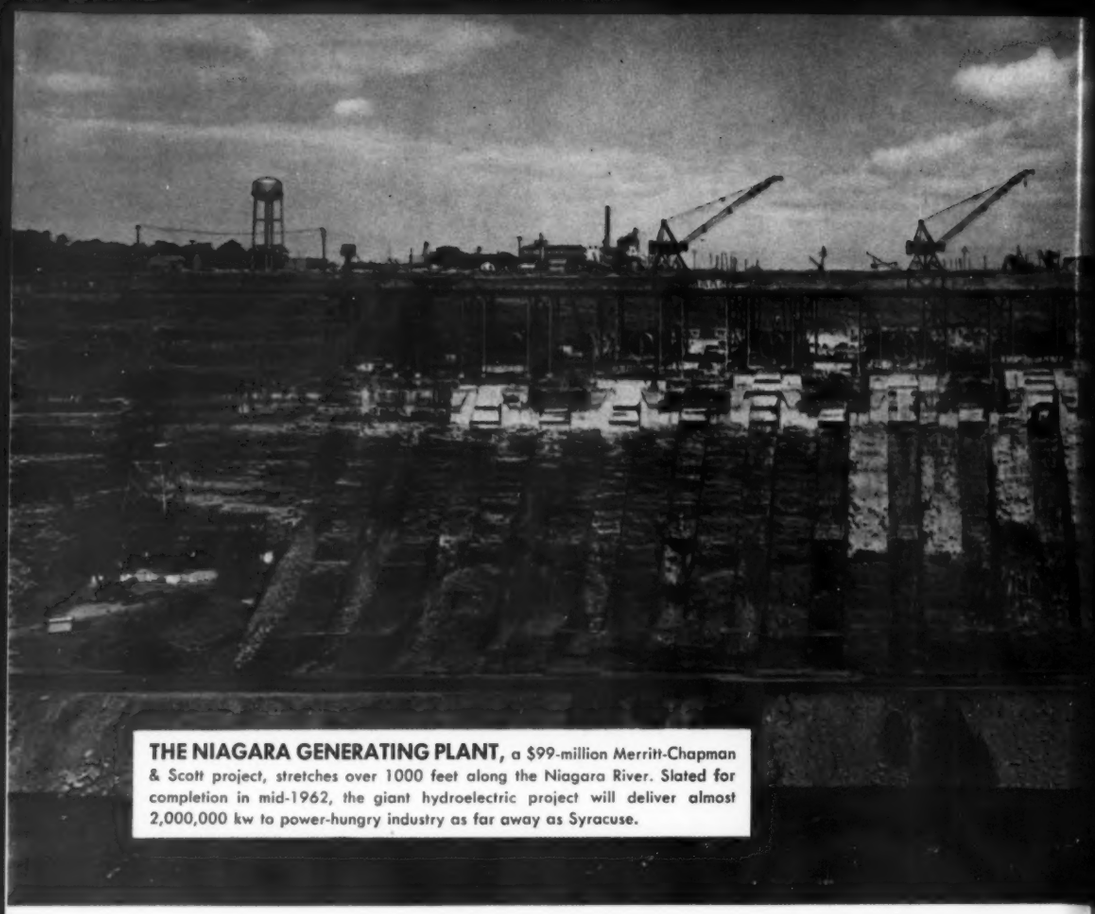


NIAGARA POWER

excavation passes halfway mark on world's greatest power project



THE NIAGARA GENERATING PLANT, a $99-million Merritt-Chapman & Scott project, stretches over 1000 feet along the Niagara River. Slated for completion in mid-1962, the giant hydroelectric project will deliver almost 2,000,000 kw to power-hungry industry as far away as Syracuse.

Texaco lubricates 80% of the job as...

Niagara team wrestles 42 million yards of rock

"Dirt" is flying on the Niagara Project – over 42 million cubic yards of it. Piled into a mountain it could more than bury the Empire State Building. This gives some idea of the tremendous scope of the operation—exceeded only by the St. Lawrence Seaway in the roster of the world's construction projects.

Almost a billion dollars will be spent before the thirteen great turbine-generators of the Niagara Generating Plant start producing power in mid-1962. Before that date arrives, four massive construction projects must be completed, whole villages moved, railroad yards and transmission lines relocated, and a 2,460-acre reservoir dug.

The size of the problems match the size of the project. Everything from Indian rights to tourist convenience has had to be considered by the Project heads. Furthermore, each contractor has special difficulties of his own to face. Merritt-Chapman & Scott Corporation, for example, in building the Niagara Generating Plant, has had to p[ar]t amou[nt] minimized the base of the 1,100 foot plant 300 feet back into [the] basing cos[t] cliff because the river bed drops too sharply to allow [for] all times the usual built-out coffer dam. Balf-Savin-Winkelm[an] with a large section of water-conduit to construct [it] blasting through solid rock all the way along its sh[ore] of the 4-mile project.

4 out of 6 projects are Texaco-lubricated

Texaco lubricants – and the Texaco Simplified Lubri[cation] tion Plan – are proving their worth on 4 out of th[e] major jobs at Niagara. At the intake, along the condu[it] at the reservoir site and at the Niagara Generating Pl[ant] itself, just eight Texaco lubricants are doing 100% [of] the lubricating jobs. This simplification of lube requi[re]ments is saving Texaco's contractor customers a sign[ifi]

These
Havolin
Ursa Oil
Regal O
Marfak
Crater –
Universa
Rock Dri
Track Ro

THE INTAKE, 5 miles upstream from the Niagara Generating Plant, will scoop up 50,000 cubic feet of water with its two harmonica mouths every second it operates at full capacity. Merritt-Chapman & Scott Corp. has a $66-million contract for the job.

THE WATER CONDUITS, 46' wide, 66' deep, stretch 22,000 feet through heavily industrialized area, feature unique hinged arches to counteract rock movement. Merritt-Chapman & Scott and Balf-Savin-Winkelman are tackling major portions.

s of rock and overburden

exam ant amount in terms of reduced inventory expense, ad to p inimized danger of misapplication and slashed pur- k into hasing costs. A Texaco team of engineers was present o allow all times for consultation and practical service.

Vinkelm
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These are the 8 Texaco Lubricants on the Project

Havoline Motor Oil
Ursa Oil Super Duty — for engines

Regal Oil (R&O) — for hydraulic systems and air compressors

Marfak Multipurpose — for chassis, wheel bearings, general grease lubrication

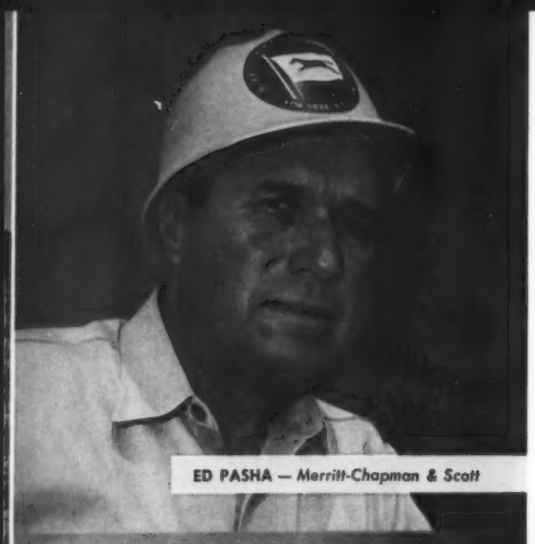
Crater — for wire rope and open gears

Universal Gear Lubricant EP

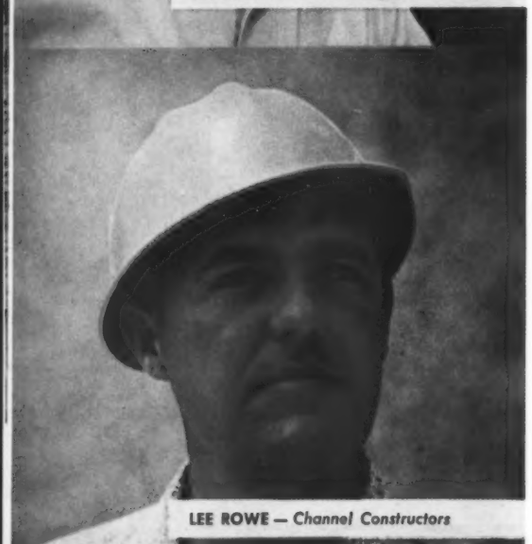
Rock Drill Lubricant

Track Roll Lubricant

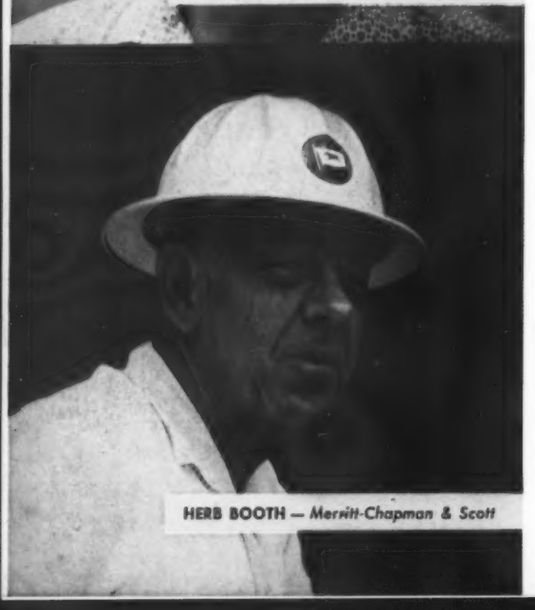
LUBE RIG SPEEDS OPERATION on Niagara job by bringing Texaco lubricants right to the locations where they are needed. With just eight lubricants for the whole job, this contractor can service any piece of equipment with the same rig.



ED PASHA — *Merritt-Chapman & Scott*



LEE ROWE — *Channel Constructors*



HERB BOOTH — *Merritt-Chapman & Scott*

Here's what TEXACO'S customers are doing:

THE INTAKE is a $65,962,254 job assigned to Merritt-Chapman & Scott. Bossed by Ed Pasha, Project Manager, Merritt-Chapman & Scott construction crews are building two harmonica-type intakes each 840 f long plus a 1000-foot adjoining upstream wall. Before work could be started on the intake structures themselve Merritt-Chapman & Scott had to build a 3,000 foot cofferdam out into the Niagara River. Other River work will eventually include a 500 foot wide channelization of t bottom for 7,000 feet downstream of the intake structure.

THE WATER CONDUITS will run for about 4 miles through a heavily industrialized area. Balf-Savin-Winkelm assigned to 9,000 feet of the work, has already finished digging its way through the rock, is now beginning on the bottom slabs.

THE RESERVOIR, assigned to Channel Constructors on a $31,855,000 contract, will cover more than 2400 acres. Lee Rowe, Project Manager, expects to move 9½ million cubic yards of rock and overburden before the job is completed. In addition to the reservoir, Channel Constructo have the job of digging out the open cut part of the waterways system and supplying all the aggregate used on the entire Niagara Project.

THE NIAGARA GENERATING PLANT at Lewiston is probably the most dramatic part of the Project. Under the direction of veteran project manager Herb Booth Merritt-Chapman & Scott crews have already carved almost 10 million cubic yards of rock out of the 314-foot cliffs below the Falls. The purpose of this monumental excavation is to provide a platform and spillway 300 feet deep and 1,840 feet long for the 13 huge turbine-generato When finished the $99,000,000 Power Plant will have an installed capacity of almost 2,000,000 kw.

Texaco Inc., 135 East 42nd Street, New York 17, N. Y.

TEXACO

Throughout the United States
Canada • Latin America • West Africa

Convention Calendar

January 11–15 Highway Research Board
Annual Meeting, Sheraton Park Hotel, Washington, D. C. Fred Burggraf, director, HRB, 2101 Constitution Ave., Washington 25, D. C.

January 18–21 American Road Builders' Association
Annual Meeting, Netherland Hilton Hotel, Cincinnati, Ohio. Norman T. Almquist, administrative services manager, ARBA, 600 World Center Bldg., Washington 6, D. C.

January 19–21 National Limestone Institute
Meeting, Statler-Hilton Hotel, Washington, D. C. Robert M. Koch, NLI, 1015 12th St. N.W., Washington, D. C.

January 24–28 Associated Equipment Distributors
Annual Convention, Conrad Hilton Hotel, Chicago, Ill. W. G. Bowman, executive secretary, AED, 30 E. Cedar St., Chicago 11, Ill.

January 25–27 Association of Asphalt Paving Technologists
Meeting, Hotel Peabody, Memphis, Tenn. Ward K. Parr, secretary-treasurer, AAPT, Box 619, 1224 E. Engineering Bldg., University of Michigan, Ann Arbor, Mich.

January 25–28 Plant Maintenance and Engineering
Show and Conference, Convention Hall, Philadelphia, Pa. Clapp & Poliak, Inc., 341 Madison Ave., New York 17, N. Y.

January 27 The Moles
Annual Award Dinner, Waldorf-Astoria Hotel, New York, N. Y. Mrs. Marguerite McLean, headquarters secretary, The Biltmore, Madison Ave. at 43rd St., New York 17, N. Y.

January 27–29 New York State County Highway Superintendents Association
Winter Meeting, DeWitt Clinton Hotel, Albany, N. Y. Harry R. Mason, secretary, NYSCHSA, Fonda, N. Y.

February 1–4 National Bituminous Concrete Association
Fifth Annual Meeting, Sheraton-Cadillac Hotel, Detroit, Mich. H. K. Griffith, executive director, NBCA, 1145 19th St. N.W., Suite 218, Washington 6, D. C.

February 15–19 National Sand and Gravel Association and National Ready Mixed Concrete Association
Forty-fourth NSGA Annual Convention, Thirtieth NRMCA Annual Convention, Biennial Show, Conrad Hilton Hotel and Chicago Coliseum, Chicago, Ill. V. P. Ahearn, executive secretary, NSGA-NRMCA, 1325 E. St. N.W., Washington 4, D. C.

February 18–20 National Society of Professional Engineers
Winter Meeting, Broadview Hotel, Wichita, Kans. Kenneth E. Trombley, NSPE, 2029 K St. N.W., Washington 6, D. C.

February 22–24 National Crushed Stone Association
Forty-third Annual Convention and Manufacturers Division Exposition, Conrad Hilton Hotel, Chicago, Ill. J. R. Boyd, executive director, NCSA, 1415 Elliot Place N.W., Washington 7, D. C.

February 22–25 Weed Society of America
Meeting, Cosmopolitan Hotel, Denver, Colo. Richard Fosse, chairman of local arrangements, WSA, Am-Chem Products, Niles, Calif.

March 1–3 College of the Pacific Highway Conference
Conference, College of the Pacific, Stockton, Calif. Adelbert Diefendorf, dean, School of Engineering, CPHC, College of the Pacific, Stockton, Calif.

March 3–4 Highway Engineering Conference of the University of Colorado
Thirty-third Annual Conference, University Memorial Center, Boulder, Colo. Roderick L. Downing, director, HECUC, 207 Engineering Bldg. No. 1, University of Colorado, Boulder, Colo.

March 8–9 Utah Highway Engineering Conference
Conference, Union Bldg., University of Utah, Salt Lake City, Utah. Preston D. Linford, chairman, Civil Engineering Dept., UHEC, University of Utah, Salt Lake City 12, Utah.

March 14–15 Ga. Highway Conference
Conference, Architecture Auditorium, Georgia Institute of Technology, Atlanta, Ga. Richard Wiegand, director, GHC, Short Courses and Conferences, Georgia Institute of Technology, Atlanta 13, Ga.

March 14–17 American Concrete Institute
Fifty-sixth Annual Convention, Commodore Hotel, New York, N. Y. Charles L. Cousins, public relations director, ACI, P. O. Box 4754, Redford Station, Detroit 19, Mich.

March 14–18 National Association of Corrosion Engineers
Sixteenth Annual Conference and Corrosion Show, Memorial Auditorium, Dallas, Texas. T. J. Hull, executive secretary, NACE, 1061 M & M Bldg., Houston 2, Texas.

March 17–27 International Construction Exhibition
Second International Exhibition, Palace of the National Industrial and Technical Center, Paris, France. Exhibition Secretariat, ICE, 1, Avenue Niel, Paris XVII, France.

March 21–24 Associated General Contractors of America, Inc.
Forty-first Annual Convention, Masonic Temple, San Francisco, Calif. James D. Marshall, executive director, AGC, 1957 E St. N.W., Washington 6, D. C.

March 27–April 1 Greater New York Safety Council
Thirtieth Annual Safety Convention and Exposition, Hotel Statler, New York, N. Y. Paul F. Stricker, executive vice president, GNYSC, 60 E. 42nd St., New York 17, N. Y.

March 29–31 South Dakota Highway Short Course
Course, Union Bldg., South Dakota State College, Brookings, S. Dak. Emory E. Johnson, SDHSC, South Dakota State College, Brookings, S. Dak.

March 30–April 1 Association of Highway Officials of the North Atlantic States
Thirty-sixth Annual Convention, Bellevue-Stratford Hotel, Philadelphia, Pa. Kenneth D. Rice, executive secretary, AHONAS, 1035 Parkway Ave., Trenton 25, N. J.

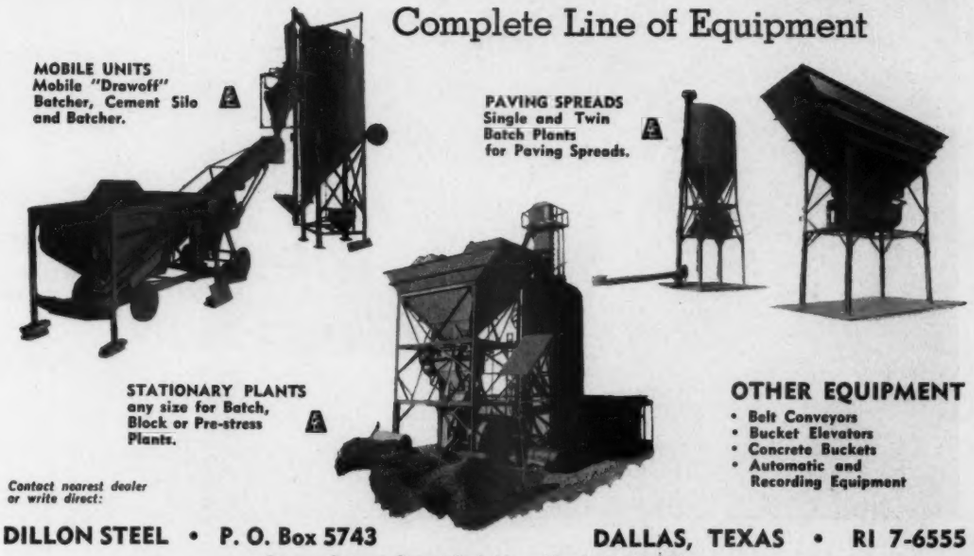
U. S. Steel builds large rolling mill

■ A new rolling mill to produce steel plates wider than any now available throughout the world will be built at the Gary, Ind., steel works of U. S. Steel Corp., Pittsburgh. The new facility, designed as a combination 160 and 210-inch-wide plate mill, will be capable of rolling single plates weighing as much as 60,000 pounds. The mill is expected to be completed early in 1962.

DILLON STEEL

STEEL FABRICATORS ENGINEERED EQUIPMENT

Complete Line of Equipment



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PAVING SPREADS
Single and Twin Batch Plants for Paving Spreads.

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any size for Batch, Block or Pre-stress Plants.

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For more facts, use Request Card at page 18 and circle No. 303

KOLMAN 303 Loader Handles 17 Cu. Yd. Loading Cycles in Twenty Seconds!

To supply dirt for a $1.3-million resurfacing and paving project, A. J. Baltes Co., Norwalk, O., put a Kolman Model 303 60-inch Loader to work on a hill two miles away.

Using 15 to 20 Euclid bottom dumps, Baltes was able to make as many as 1006 loads in a ten-hour day. The 60-inch belt of the 25-ton portable loader handled 15 and 17 cu. yd. loading cycles in as little as 20 seconds. Eight bulldozers, three of which had rippers and scarifiers mounted on them, broke loose the dirt and charged the 303 feeder-trap.

In the right foreground is the huge surge pile that covers the loader's entire feeder-trap and tunnel. Baltes moved the loader occasionally to keep it flush with the hill as it was eaten away. A dual tandem undercarriage with 10.00 x 20.00 tires and air brakes simplifies movement of the 303 both on and between jobs.

The Kolman 303 moves earth, sand, gravel, rock and similar materials on a gigantic scale by combining the economy of conveyor belt loading with the speed of dozer charging. The loader handles material at rates over 3600 yards per hour.

Write for literature and prices today. You'll soon see how this Kolman loader can make bigger profits for you, too.

KOLMAN MFG. CO.
4022 W. 12th, Sioux Falls, S. D.

For more facts, use Request Card at page 18 and circle No. 304

NEW! 30-YD CAPACITY

New Standards of A

Plus the exclusive advantages of KON-TORK differential . . . a combination that means extra profit capacity for you —loading, hauling and spreading.

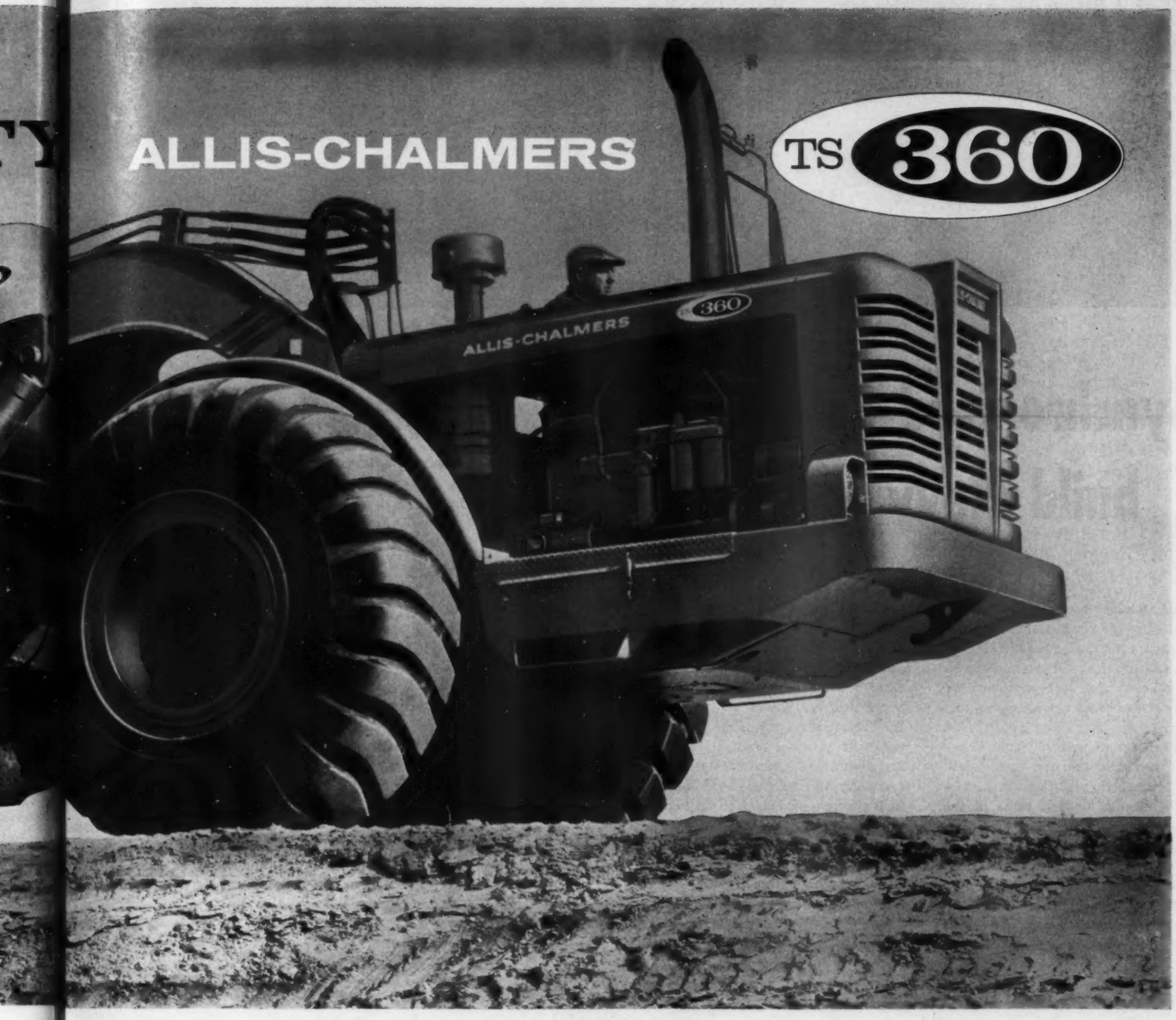
New 30-yd capacity . . . backed by 340 turbocharged horsepower gives you the size, the power and the durability to tackle any size job . . . I-system dirt, king-size dams, big state highway jobs.

The new *360* gives you more big-production features than any other big scraper, too: high-torque engine characteristics and snappy acceleration . . . full 90° steering . . . 10-ft apron lift . . . torque-proportioned traction . . . *plus* the new standards of all-hydraulic performance spotlighted at the right.

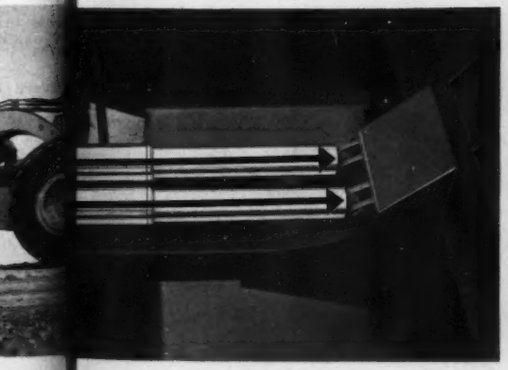
Get the full story on this all-new, all-hydraulic TS-360 from your Allis-Chalmers dealer now!

Everything you'd want in a big motor scraper if you were building it for your own jobs!

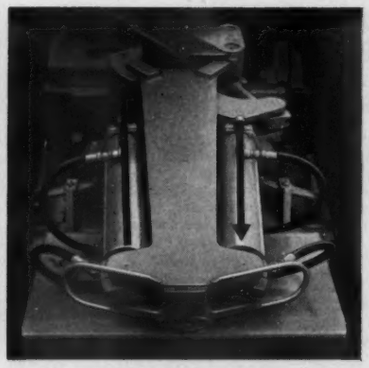
Double-acting bowl jacks put enough penetrating force on the cutting edge to pivot the scraper *and its load* clear of the ground.



# of All-Hydraulic Performance



Twin telescoping cylinders provide smooth, forced ejection of any material . . . without "pumping" tailgate.



Double-acting steering jacks are fed by an *independent* hydraulic system . . . assure two-speed steering power to match any situation.

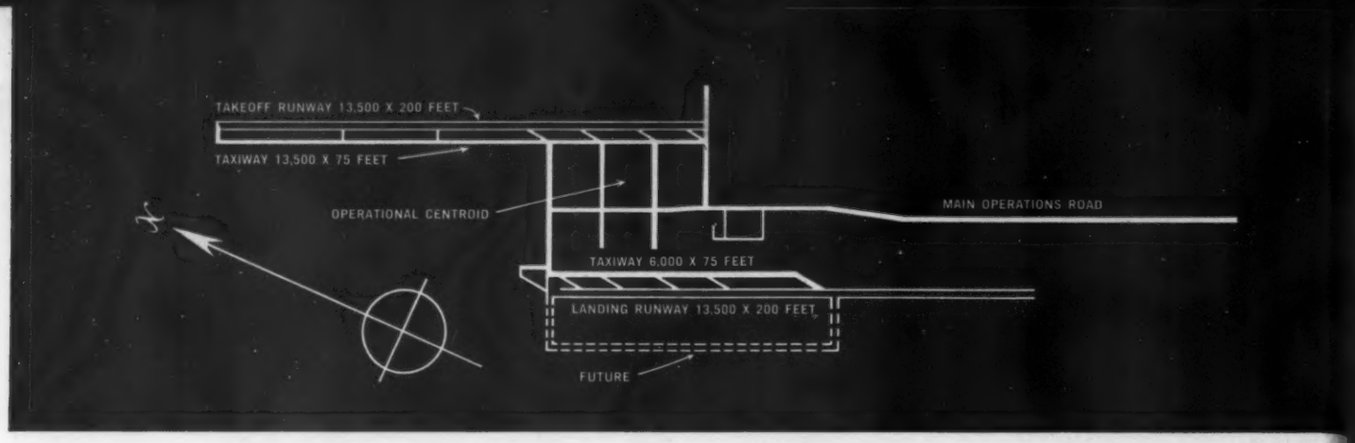
KON-TORK differential automatically controls distribution of torque to drive wheels . . . for maximum traction to match any working condition.

KON-TORK is an Allis-Chalmers Trademark.

...move ahead with

ALLIS-CHALMERS

...power for a growing world


TAKEOFF RUNWAY 13,500 X 200 FEET
TAXIWAY 13,500 X 75 FEET
OPERATIONAL CENTROID
MAIN OPERATIONS ROAD
TAXIWAY 6,000 X 75 FEET
LANDING RUNWAY 13,500 X 200 FEET
FUTURE

Synchronized spreads build Navy airfield

Contractor is building two 13,500-foot paved runways, plus taxiways, aprons, and utilities in 13 months

by RALPH MONSON, field editor

Undertaking a $13 million airfield paving project in only 13 months' time presents a big challenge. But Griffith Co., Los Angeles, is moving ahead on schedule on just such a job on the Navy's new master jet base at Lemoore, Calif.

Located in the San Joaquin Valley near Lemoore, the new facility will serve the high-performance jet aircraft assigned to fleet units in the San Francisco Bay area. The complete facility, which is estimated in excess of $85 million in construction costs, is scheduled for completion by July, 1961, just a little more than three years from the start of work on the initial phase in May, 1958.

Griffith has the first increment contract, which includes grading, base, and paving of the runways, taxiways, and aprons, as well as road and utility construction and many incidentals.

The design of the facility embodies the latest concepts in military airfields. It provides separate landing and takeoff runways, each 13,500 feet long and 200 feet wide, of 12-inch concrete pavement on an 8-inch soil-cement base and 12 to 36 inches of select-fill subbase. The landing runway has a 6,000×75-foot taxiway with diagonal cross taxiways for high-speed maneuvering. The takeoff runway has a full-length taxiway, 13,500×75 feet.

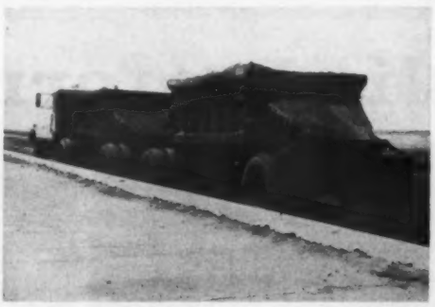
In the centroid area between the two parallel runways is a large series of aprons and taxiways joining the two runways. In this area will be located the facilities for servicing the aircraft, as well as the operational and some administrative facilities.

The resident officer in charge of construction of the new naval air station is Capt. Viggo C. Bertelsen (CEC) U. S. N. On his staff are Cmdr. D. K. Culp, Lt. J. E. Tyhurst, Lt. R. A. Bowers, and Lt. (j.g.) W. C. Campbell. Civilian personnel includes C. W. O'Leary, director of the construction division; Irving S. Bush, manager of centroid-area operations, J. L. Neely, manager of the operations facilities branch, and L. S. Hauser, who serv as manager of the administrative a branch.

Directing the operations of t Griffith crews are project mana J. F. Porcher, project superintend Art A. Kinnamon, job superintend John Tiger, assistant superintend Walt Gobbie, and project engineer Bergholdt.

Griffith's spread is so well organi that it doesn't appear to be hurryi Yet all of the work moves ahead a pace that keeps the three big pav of the concrete spread working to f capacity throughout a shift. Here' photographer's view of the constru tion . . .

Placing and compacting 12 to 36 inches of select fill for subbase was the first step of paving. A Peterbilt water truck applies moisture to the subbase as the John Deere disk pulled by a D8 works water in.



Bottom-dump haul rigs, such as these trailers pulled by an Autocar diesel truck, dump the sand-silt material for the cement-treated base course on the stabilized and compacted subgrade.

This shop-built windrowing attachment on a Cat motor grader shapes and sizes the windrows to 4 cu feet per running foot. Two such windrows in each la provide the first 4-inch lift of the base.

Cement in a ratio of 2½ per cent is proportioned simultaneously to the two windrows by this Pettibone Wood twin cement distributor on a Peterbilt truck. The rig holds 80 barrels.

The windrows are mixed by a Pettibone Wood Roadmixer that adds the necessary amount of water. A Peterbilt water truck supplies water to the mixer. These windrows are mixed within the paving forms for the 25-foot lane.

After a grader spreads windrows and provi initial compaction, a Buffalo-Springfield, w a smooth and a segmented roller, compa the 4-inch lift to 95 per cent density.

Two more windrows of base material are laid out beside the lane and mixed by a second Roadmixer with a side delivery conveyor. Windrows are placed inside the forms on top of the first lift.

The windrows for the second lift were spread out and compacted in the same way as for the first. The surface is cut to grade by this Cat No. 12 motor grader fitted with a guide that runs on wheels on the side form.

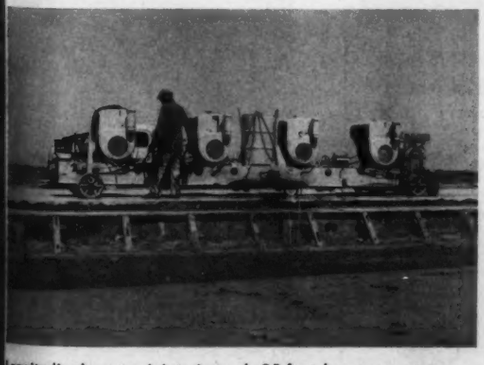
A Lewis subgrader, riding the forms and pulled by a Cat D8 tractor, cuts the base to exact grade. A BMCO 9-wheel rubber-tire roller makes the final compacting pass behind the subgrader.

At this stage, Navy inspectors check both lower and upper lifts of the base in each 1,000-foot section. Soiltest equipment is being used to verify the density of the lower 4-inch course of the base.

When the section is approved, it is given an application of MC-2 cutback asphalt to seal in the moisture. This spray jumbo, which rolls on the forms, is attached to a distributor to apply the asphalt to the base.

Three Koehring 34-E pavers place concrete for the 12-inch paving slab as a Blaw-Knox paddle-type spreader with vibrators distributes the mix across the lane between the forms. Curing blankets are ready for use.

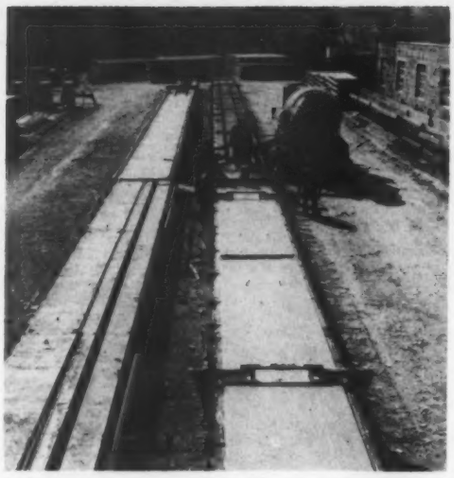
Following the spreader and a finishing machine in the paving train is a float-finisher, which makes the final pass and provides the smooth surface required for high-speed jet operation.



Longitudinal center joints in each 25-foot lane are cut to a depth of 3 inches by this big Concrete Machinery gang saw. The tandem saws are set so that each one cuts progressively deeper as the rig moves along.

An Austin-Western hydraulic crane pulls form pins. In background, a truck-mounted hydraulic crane loads form sections on a truck to be moved ahead.

The batching setup includes two plants. The big Noble plant at left batched the paving mix at a rate of 430 yards per hour. The smaller plant served transit mixers and provided auxiliary capacity for paving.



These two double-tee beds form the nucleus for the prestressing plant of Knox-Blox, a Nashville, Tenn., concrete-block manufacturer that made a successful entry into the prestressing field about two years ago. Removable tee stems of 8, 12, 16, and 20 inches enable the firm to fill a variety of orders.

Concrete-block company learns new tricks as it racks up a . . .

Profit in prestress

A big income producer for a Kno ville, Tenn., concrete-block manufa turer is its prestressed-concrete pla

Knox Concrete Products, Inc., p the plant into operation in the summ of 1957 with two double-tee castin beds having effective working lengt of 200 feet. Knox-Blox, as the firm called, installed this type of bed b cause of the demand for the double tee prestressed component. Recentl a 3-row universal beam bed with 140-foot working length was com pleted to handle the increased orde for prestressed girders and beams.

The double-tee beds were built permit the use of removable tee stem Knox-Blox has 8, 12, 16, and 20-inc steel stems on hand to meet almo any double-tee order. Each 5½-foot wide bed consists of three 6-inch thick 2-foot-high precast-concre walls—two running along the edg of the bed and one down the center that enclose the hot-oil lines and r turns used to cure the double tee. Th stem inserts are easily replaced b fastening them to the steel framin between the three concrete walls. Th framing also supports the horizonta forms of the double tee. At each en of the bed, the precast walls are tie back to the end abutments, each which has a steel plate embedded in These plates have many rows of hol to accommodate the prestressin strands.

Fabricates clamps

To form keys along the top thick ness of the double tees, and to for the correct width, Knox-Blox us steel angles clamped to the side flang forms. The angles are positioned an held in place by specially built clam

(Continued on page 8

Forms for different stem sizes fit ov the steel framing of the double-tee ca ing bed. Hot-oil lines and returns a housed within the framing to spe curing. The member across the bed is hold-down device to maintain stra alignment in the double-tee beams.

Bethlehem Wire Rope Helps Clear Way for Mountain Highway. This action photograph shows Bethlehem 1⅛-in. shovel hoist ropes at work on a 2½-mile road relocation project atop Broad Mountain, on Pennsylvania's winding Route 29. The contract, supervised by the Pennsylvania Dept. of Highways, called for the removal of 900,000 cu yd of sandstone and earth.

On this job the Bethlehem wire rope is subjected to hard usage, day after day. Yet it keeps coming back for more—just as it is doing in thousands of construction jobs all across the land.

Bethlehem Steel Company, Bethlehem, Pa. *Export Distributor:* Bethlehem Steel Export Corporation

Mill depots and distributors from coast to coast stock Bethlehem wire rope

BETHLEHEM STEEL

For more facts, use Request Card at page 18 and circle No. 306

Here's proof Coromant rope-thread bits and steels SAVE TIME AND MONEY!

"Up to double the footage between sharpenings!"
"Premature rod breakage is almost non-existent!"
"40% more usable life—more resharpenings!"
"Bit and rod life are well above average!"
"Uncouple by hand all the time!"
"More rigid—drills straighter holes!"*

**Names of men quoted available on request*

The comments above are actual quotes from project managers, job superintendents, and drill superintendents who have tested new Coromant, rope-thread bits and steels. They've learned, on-the-job, the benefits they—and you—can expect!

For example: The new rope-thread (only two turns per inch) holds tight in use, yet permits hand uncoupling. Reports show that the time saved results in more footage drilled per shift. Bit footage is well above average too, with less loss of carbide inserts. Prime quality ore plus nickel-chrome alloy permits cold-rolling from billets for greater strength, life and rigidity. And only with Coromant rope-thread steels can you re-thread without heat treating, too. Do it yourself, or at any nearby machine shop.

Want to know more? There's no obligation on your part, but we'll be glad to help where we can. Just call your nearest Atlas Copco Office, or write to us at Dept. CAE-7.

Atlas Copco

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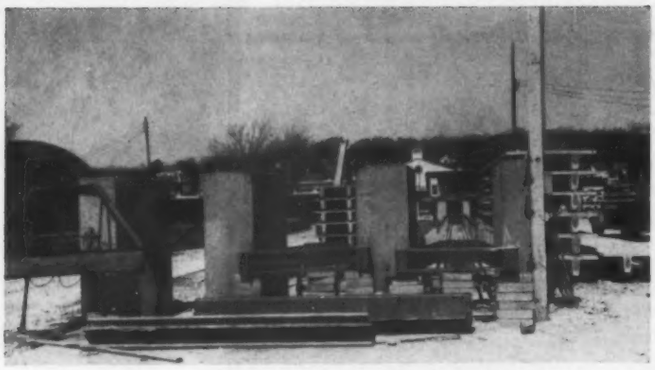
For more facts, use Request Card at page 18 and circle No. 307

(Continued from page 80)



The newest addition to the plant is this universal beam bed, which the firm built to keep up with the growing demand for prestressed girders and beams. The bed, which has 3 rows, has a 140-foot working length.

uniformly centered along both sides of the casting bed.

To provide a special fastening edge for the quick-releasing clamps, the company embedded 3×3-inch steel angles along the top outside corner of the two outer casting-bed walls. A 1×1-inch steel square section was then welded at the top of the vertical surface of the embedded steel angle. On top of the 1×1-inch square rod, a ⅜-inch-diameter steel bar was welded for the entire length of the casting bed, and on each side. The clamp itself consists of a horizontal bar that can be positioned to the steel edge angle, a steel housing with a lip that allows it to hang from the ⅜-inch round, and a hinged lever arm. Clamps are released when the arm is raised.

A covered strand rack, installed behind the jacking end of the casting beds, has a capacity of 8 reels of pretensioning strands. Strands are pulled manually down the double-tee bed after being passed through the strand template at the jacking end. The strands are then cut and attached to the strand template with Supreme strand vises.

Stress placed

A Greenlee hydraulic pump, driven by a General Electric motor, powers the two Simplex 60-ton jacks used to stress the double-tee strands. Since the required strand elongation is 11

Two Hyster Karry Kranes lift a single-tee beam section from the forms to transport it to the stockpile.

Concrete delivered by Jaeger transit mixer is chuted to forms and consolidated by a Master electric vibrator.

A Master screed finishes the surface of a beam. Side clamps hold the steel angle that determines the top thickness.

Here's another reason why Ford Trucks are your best buy!

"OF ALL THE MAKES WE'VE TRIED FORD TRUCKS GIVE US THE LOWEST MAINTENANCE COST!"

ANOTHER REPEAT BUYER OF FORD TRUCKS

Virgil E. Cook, owner of Cook Block and Brick Co., is convincing proof that there is still plenty of opportunity in American business for those sound planning, hard working individuals who want to own their own business. Starting from scratch just 13 years ago, he now owns and operates one of the largest concrete products plants in Eastern Indiana. The workhorses in his fleet of 16 trucks are three Ford Tilt Cab Tandems that are used to haul sand and gravel to the plant and make deliveries in and around Anderson.

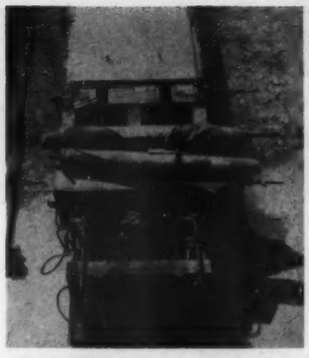
Hard-working Ford CT-950 tractor leaves Cook gravel pit with 18 yards of aggregate. Aluminum walking beam and rubber suspension system of tandem axle assembly reduce chassis weight, permit higher legal payloads.

Cook's CT-850 with special flat-bed body and Side-O-Matic unloader delivers blocks right to the job site. Unit carries 600 concrete blocks and spots them where needed.

to 16 inches before the tensile load is reached, and the jacks have a maximum 10-inch stroke, the strand vises have to be repositioned at the permanent strand template. Strand vises at the push-block are then loosened to reposition the block for additional stressing. Since the two 60-ton jacks used for beam-bed stressing have 24-inch strokes, this 2-stage operation is eliminated.

Strand deflection is done by a shop-built unit handled by one of the Hyster Karry Kranes. The unit hooks around the outside walls of the double-tee bed. When a plunger is lifted, two stems push down on the strands in each stem. A hold-down device is then installed and the strand deflector removed.

Concrete is delivered to the casting beds in Jaeger transit mixers, and chutes are used to transfer the mix to the oiled forms. As concrete is placed, it is consolidated by Master electric vibrators. A Master vibrating screed is used to finish the surface of the double-tee beams.



At the jacking end of the double-tee bed, a Greenlee hydraulic pump is flanked by two Simplex 60-ton jacks. Prestressing strands pass through the push-block and the strand template, which is embedded in the anchor wall of the bed. Tarps are for curing.

After the initial set of the concrete, the beams are sprayed with water and covered with tarpaulins so that curing can start. Hot oil, heated from 200 to 325 degrees F by a Hopkins' Volcanic Model 300 gas-fired boiler, circulates along the lines adjacent to the stem forms in the bed. This continues for 12 to 15 hours; after 20 hours, the beams are ready to be stripped. At this time the concrete has to have a strength of 3,500 psi.

Detensioning, done prior to stripping, merely involves cutting strands between beam bulkheads with a torch. This procedure also helps to break any bond between the beam and the forms.

Two Hyster Karry Kranes then simply pick up a beam, using the lifting hooks embedded in the concrete, and transport it to the stockpile at the yard.

Personnel

Amos Brown is the plant superintendent; Paul Anderson, the plant foreman; and Paul Jones, the plant engineer. E. B. Barnes is the general manager of Knox Concrete Products.

THE END

Two international shows on construction, rigs

■ Paris, France, will be the site of two international shows in the field of construction and public works. From March 17 to 27, the second International Construction Exhibition will be housed in the Palace of the National Industrial and Technical Center. This exhibition will feature construction materials, building products, and housing.

The second International Public Works and Building Equipment Exhibition, from May 19 to 29, will be at the Aeronautical Palace at Le Bourget Airport. On view will be road-building, materials-testing, drilling and boring, earthmoving, and pneumatic handling equipment. Also to be displayed will be machines for the manufacture, transport, distribution, and conditioning of concrete; engines; compressors; pumps; generators; cables; ropes; chains; scaffolding; special automotive and pneumatic vehicles; and city and highway signals.

Information on either or both of these international exhibitions is available from the Exhibition Secretariat, 1, Avenue Niel, Paris XVII, France.

Clark International buys German equipment firm

■ Clark Equipment International, C. A., and its affiliated German licensee, Ruhr Intrans Hubstapler G.M.B.H., have acquired the assets of W. & J. Scheid, Limburg/Lahn, West Germany, manufacturer of rollers, compactors, vibrators, and other road repair equipment. The German firm has been reorganized as Scheid Maschinenfabrik G.M.B.H. Expansion of the acquired firm's plant is under way, and installation of new manufacturing equipment is about completed. The first Michigan models from the new subsidiary are expected early this year.

Clark International is a subsidiary of Clark Equipment Co., Buchanan, Mich.

Bros names parts manager

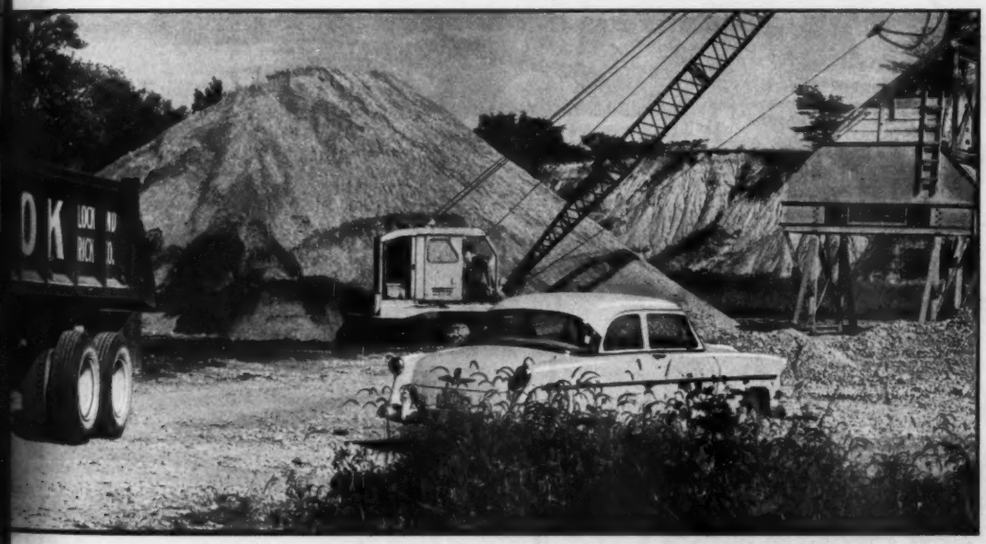
■ Tom Fagerwold has been appointed parts manager for Bros, Inc., Minneapolis. For the past 14 years he has been associated with automotive, truck, and marine parts and service work.

Our experience has proved that Ford Trucks can be operated at substantially lower maintenance costs than any other make we've tried. And, equally important in a fleet like ours, we find that our Fords spend much less time in the shop. None of the Ford units purchased since 1958 have been in for major repairs and I am still amazed at the way the older ones keep going.

"The best truck we've ever owned is a 1954 Ford C-700 that consistently carries a load of 350 to 400 blocks over all types of terrain. In spite of this severe work it ran 125,000 miles before we replaced the engine. This unit now has over 140,000 miles on the original ring gear and pinion and it went 60,000 miles before we relined the brakes and put in a new clutch. This is outstanding mileage when you consider that we've realized as little as 12,000 miles from competitive ring gear and pinion sets. Clutch and brake life obtained with other makes in identical service was only 20,000 miles. It's results like this that keep our costs low and convinced us that we should stay with Fords when we bought our bigger trucks in '58.

"Our 1958 and 1959 Ford Tilt Cab Tandems give every indication of equalling or surpassing the fine records set by the C-700. The two CT-950 tractors hauling sand and aggregates to our processing plant breeze through traffic and take the hills like they weren't there at all. Our CT-850 equipped with a flat-bed body has the power and traction to deliver finished products anywhere. With Ford's tilt-cab design we get a real plus as far as payload is concerned because we can carry at least 2,000 pounds more weight on the front axle.

"We buy Ford Tilt Cab Trucks because we think they're the best engineered and most modern gasoline trucks in the heavy-duty field. Here at last is a truck built to permit big legal payloads with enough power to move these loads at economical speeds. We pride ourselves on our modern and efficient equipment and consider our Fords one of the most valuable assets of our business."



60 Fords are built for longer life . . . with Certified Durability!

Whatever your job . . . wherever you do it . . . you'll discover just as Mr. Cook did, that Ford Trucks are the best investment for your transportation dollar.

Certified results of tests conducted by America's leading independent research organization (name available on request) confirm the fact that Ford Super Duties have been refined for still more durability! Automatic radiator shutters, improved electric fuel pumps and redesigned wiring harnesses are typical of the advancements to be found in these units.

Automatic radiator shutters reduced the coolant temperature variation recorded in severe mountain road tests from a 79° range to a 20° range. Engine operation with coolant temperatures in the 167° to 187° range means less expansion and contraction, more efficient combustion and better lubrication . . . all of which contribute to longer engine life.

Dynamometer tests showed *no vapor lock* with Ford's submerged-type electric fuel pump at temperatures up to 200°. Incipient vapor lock with mechanical fuel pump resulted in a power loss of 9% under the same conditions. Shaker table tests plus constant exposure to oil, water and heat proved 1960 wiring harness to be *three times longer lived.*

FORD TRUCKS COST LESS

LESS TO OWN . . . LESS TO RUN . . . BUILT TO LAST LONGER, TOO!

For more facts, use Request Card at page 18 and circle No. 308

ECONMOBILE 620

WORLD'S CHAMP of Material Handling

LIFTING HEIGHT TOPS!

30'6" heel of fork to ground

WEIGHT LIFTING

4000 lbs. to 30'6"

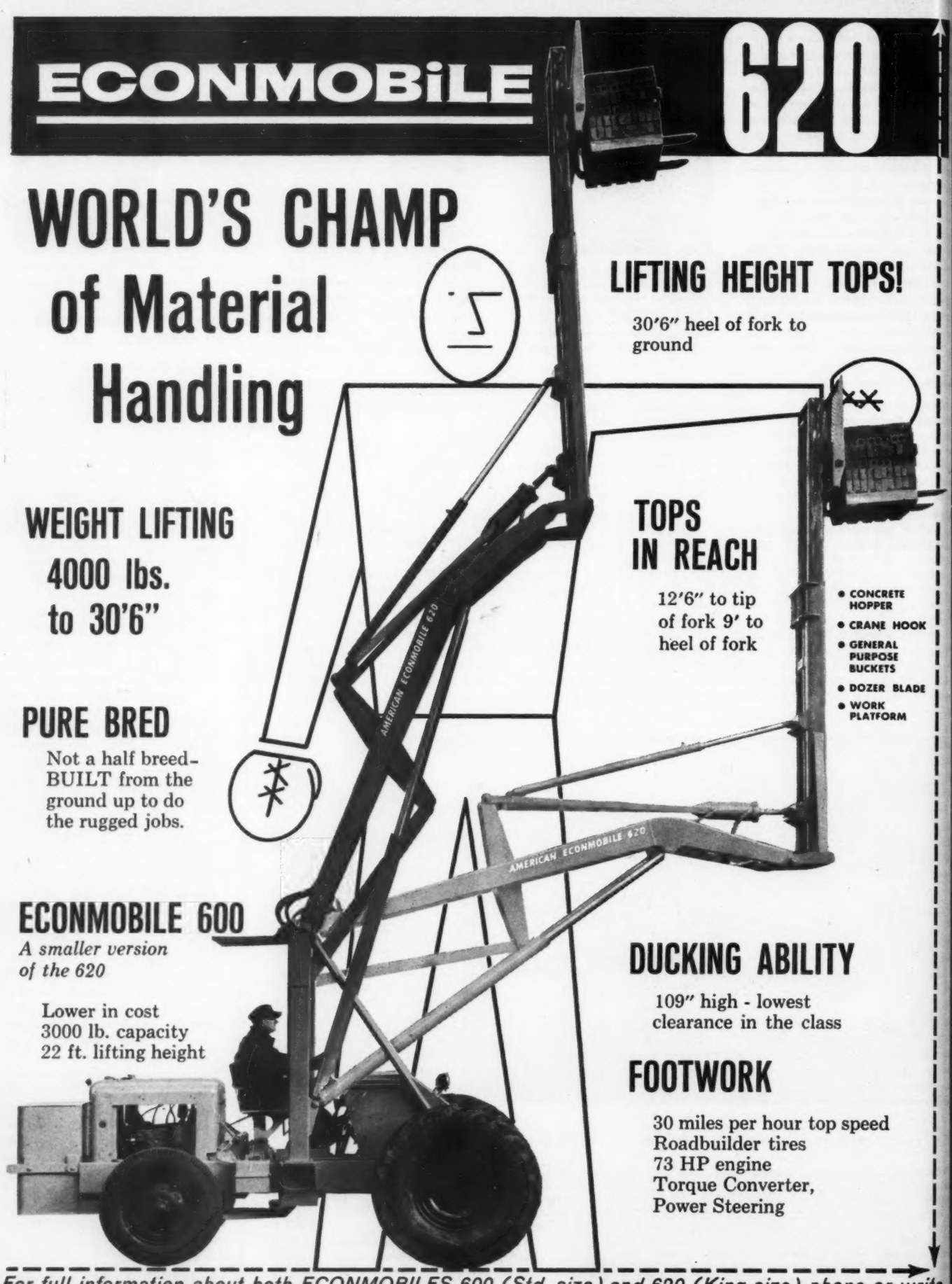
TOPS IN REACH

12'6" to tip of fork 9' to heel of fork

- CONCRETE HOPPER
- CRANE HOOK
- GENERAL PURPOSE BUCKETS
- DOZER BLADE
- WORK PLATFORM

PURE BRED

Not a half breed-BUILT from the ground up to do the rugged jobs.



ECONMOBILE 600

A smaller version of the 620

Lower in cost
3000 lb. capacity
22 ft. lifting height

DUCKING ABILITY

109" high - lowest clearance in the class

FOOTWORK

30 miles per hour top speed
Roadbuilder tires
73 HP engine
Torque Converter,
Power Steering

For full information about both ECONMOBILES 600 (Std. size) and 620 (King size) phone or write

AMERICAN ROAD EQUIPMENT CO.
4201 North 26th Street Omaha, Nebraska

For more facts, use Request Card at page 18 and circle No. 309

New construction process cuts a dollar per square foot off cost of concrete buildings

■ A new construction process known as Tilt*Frame is said to shave a dollar per square foot off the cost of erecting concrete buildings. This process of forming and erecting steel-reinforced concrete walls eliminates the need for grade beams and flooring to be in place before walls can be set. The Tilt*Frame process was originated by Garmon Construction Co., Fort Worth, Texas, which also holds a patent on it.

A complete construction unit consists of eight Tilt*Frames for wall panels, eight column frames (including one corner frame), and all necessary accessories. Wall panels for a 100,000-square-foot building can be erected in 11 working days.

Small crews with a minimum of experience suffice for wall erection when this process is used. The frames are positioned on the ground outside the building area. After concrete has been placed for all piers, wall construction begins. Windows and doors are located in the frames, and steel reinforcing bars are positioned for greatest wall strength.

Concrete is placed in the frame, and finishers do their jobs to assure attractive exterior design and finish. Structural members are positioned in the frame or in the concrete after it is poured to meet the requirements of the finished building.

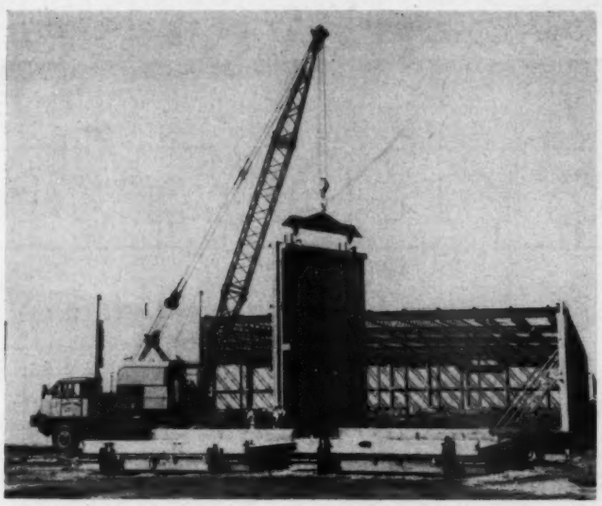
Less than 24 hours after the wall is poured, it is ready to be lifted into place. A spreading bar is attached to the frame at specified points and the wall slab is lifted into place on a concrete pier. Tilt-up wall braces are attached to hold the wall upright until the roof structure is installed.

Because of the design of the frame and manner in which the wall is lifted, no stress is applied to the uncured wall. Thus, delays and losses from warped or damaged walls during the lifting process are negligible. In the construction and setting process, walls may be cast as either curtain or load-bearing, depending on building demands.

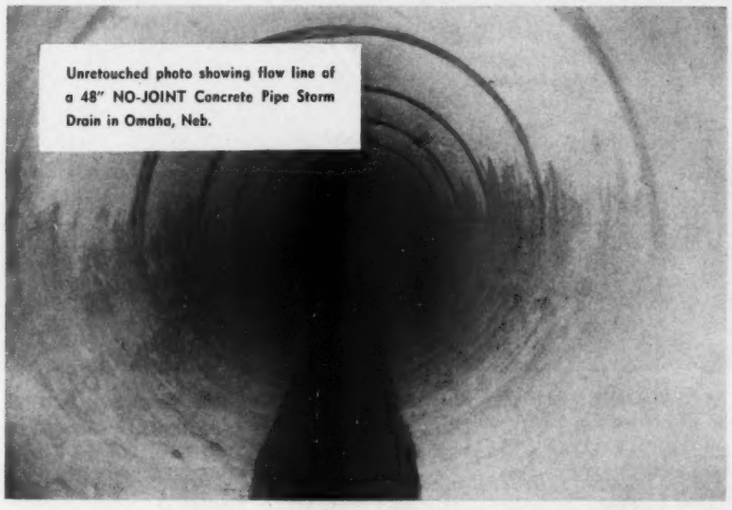
Once the walls are in place, precast reinforced-concrete columns are inserted between the slabs. Construction time for 130 linear feet of walls is eight hours. Waterproofing is unnecessary. Standard Tilt*Frame walls are 23×15.8 feet; wall thickness may be varied to meet local or other requirements.

Garmon Construction plans to issue Tilt*Frame franchises on an exclusive territorial basis throughout the United States. Holders of the franchises will be in a position to underbid builders using conventional tilt-up construction and other methods, and also will be able to negotiate contracts for which there can be no competitive bid, since the process is not available to competitive builders.

The Highway Trust Fund, with borrowings of $145 million in the form of "repayable advances" from the general fund, ended the month of October with a deficit of $124,008,003.



A Lorain crane swings a wall panel into place for a concrete structure being built with the Tilt*Frame process. Garmon Construction Co., Fort Worth, holds the patent on the process, which makes it possible to erect walls before grade beams and flooring are in place.



Unretouched photo showing flow line of a 48" NO-JOINT Concrete Pipe Storm Drain in Omaha, Neb.

Smoother Flow through NO-JOINT Concrete Pipe!

CONTRACTORS: Are you making the *profit* you should on concrete pipe installations?

Here is how you can *increase profit,* and still have *low bid* on the big jobs: When you install *100% perfectly bedded* NO-JOINT Conduit you produce a *highest quality* product at *lowest cost.* You *eliminate* the high cost of *back filling and tamping* to the spring line. There's no hauling and handling of pipes, and less trenching, backfilling, black top and labor cost is *greatly reduced.* There are *no pipe inventories* to maintain; *no capital investment inventories* to tax!

NO-JOINT can put you in the concrete pipe manufacturing business for as little as $15,000. When you are a NO-JOINT distributor, you add *manufacturer's profit* to your normal contractor's profit!

Don't delay. *Write today* for information on NO-JOINT *licensed territories* or *rental* of NO-JOINT equipment.

ENGINEERS: Cast-in-place, Roman arch design NO-JOINT Concrete Pipe can *save up to 30%* of your concrete pipe dollar! *Saves on maintenance,* too, because there are *no joints to spring leaks.*

NO-JOINT Conduits have the *smoothest flow line;* efficient, clean-line design all the way! *Hundreds of miles* of NO-JOINT pipe now in use for storm drains, sanitary outfall sewers, culverts and irrigation projects. Sizes from 24" up to 72" ID.

Flexural strength of extruded NO-JOINT Concrete Pipe is *uniform* throughout its length. Bearing loads are *uniformly resisted* and *joint leaks eliminated.*

Government Engineers: save taxpayers up to 30% on concrete pipe projects! Use the savings for *additional* needed sewers or storm drains.

Consulting Engineers: save your clients up to 30% on concrete pipe costs! It will pay you to investigate this *more efficient, economical* pipe.

NO-JOINT CONCRETE PIPE CO

SHerwood 2-8549
P. O. BOX 609A
YUBA CITY, CALIFORNIA
U. S. A.

TERRITORIES: Many profitable NO-JOINT territories are still available. Write or phone for information today.

FREE CATALOG: Large, colorful catalog graphically describes the NO-JOINT Cast-in-place process. Write for your free copy today.

NO-JOINT Concrete Pipe Distributors

ARIZONA
Southwest No-Joint Distributors
137 West D, Glendale

CALIFORNIA
Central California No-Joint Concrete Pipe Co.,
391 Sutter St., San Francisco
G. G. Williamson Co.,
P.O. Box 1091, Chico
Irrigation Installation Co.,
P.O. Box 88, Yuba City
Monolithic Pipe Lines, Inc.,
P.O. Box 356, Palo Alto
No-Joint Concrete Pipe Corp. of Southern Calif.,
3411½ N. La Brea, Los Angeles 36
Wm. Lynch Pipeline Construction,
P.O. Box 425, Dixon

COLORADO
Colorado No-Joint Concrete Pipe Co.,
P.O. Box 550, Rocky Ford

HAWAII
Highway Construction Co.,
720 Umi St., Honolulu 17, Hawaii

NEVADA
Nevada No-Joint Concrete Pipe Co.,
P.O. Box 93, Marysville, Calif.

TEXAS, OKLAHOMA, NEW MEXICO
Midwest No-Joint Concrete Pipe Co.,
704 Equitable Bldg.,
Denver 2, Colo.

WASHINGTON
Northwest No-Joint Concrete Pipe Co.,
P.O. Box 356, Station A,
Palo Alto, California

FOREIGN

AFRICA
The Hume Pipe Co.,
P.O. Box 204,
Germiston, South Africa

AUSTRALIA
E. P. Lough & Co. Aust. Pty. Ltd.
26 Ridge St., North Sydney, N.S.W.

CANADA
Keystone Contractors Limited,
P.O. Box 128, Windsor, Ont.

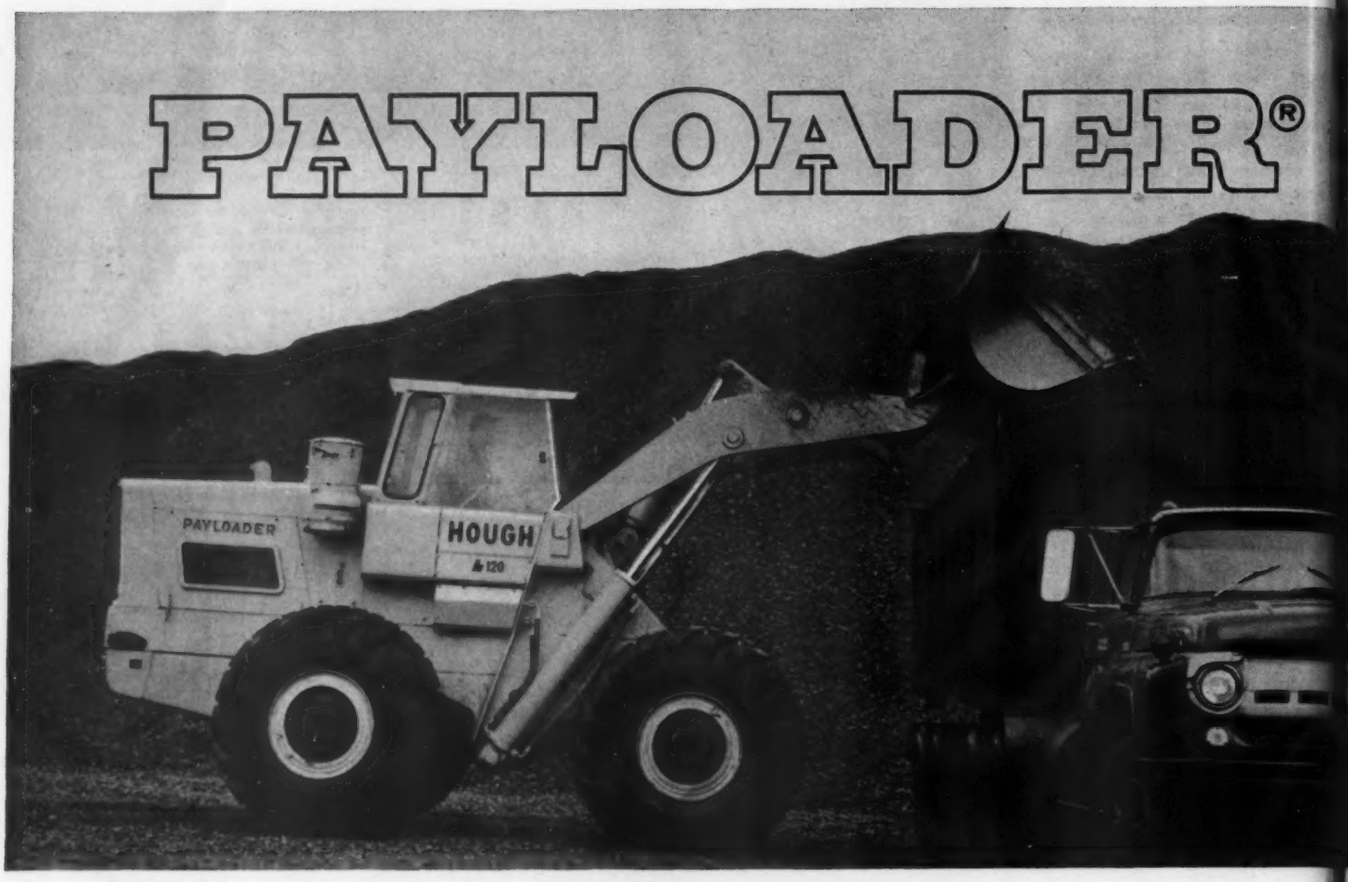
INDIA
Structural Engineering Works, Ltd.,
127 Mahatma Gandhi Rd.,
Fort Bombay 1

SOUTH AMERICA
No-Joint Concrete Pipe De Venezuela, C. A.,
Apartado 10860, Sabana Grande,
Caracas, Venezuela

ASSOCIATED WITH
Morrison-Knudsen Co.,
San Francisco, Los Angeles, Mexico, D. F.

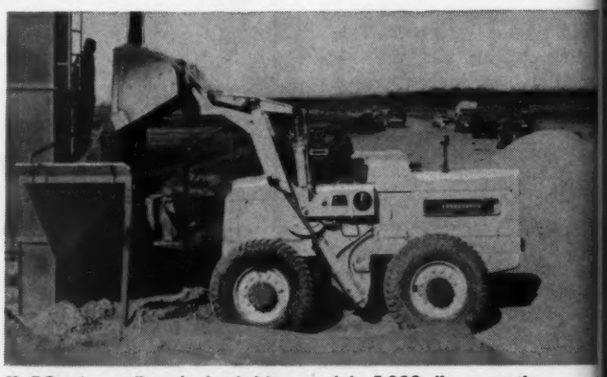
For more facts, use Request Card at page 18 and circle No. 310

PAYLOADER®



H-120 Big 300 hp. "PAYLOADER" handles up to 7 tons per pass with lift height more than 14½ ft. under hinge pin; forward reach of 3½-ft. ahead of front tires. Buckets to 6 cu. yds.

H30-R Rear-wheel-drive model with 3,000 lb. operating capacity; buckets from ⅗ to 2 cu. yds.; 4-speed full-reversing transmission and torque-converter drive.



H-50 A smaller 4-wheel-drive model; 5,000 lb. operating capacity; buckets up to 2 cu. yds.; gasoline or diesel power; many useful attachments available.

H4H 3,000 lb. operating capacity with front-wheel-drive, rear-wheel power steer; long reach, high dump; ¾ to 2 cu. yd. buckets; torque converter.

MODEL 12 Crawler tractor-shovel with stable rear-engine design; 1¾ cu. yd. bucket; full-reversing, 3-speed power-shift transmission with torque converter.

For more facts, use coupon on facing page or Request Card at page 18 and circle No. 311

FOREMOST LINE OF TRACTOR-SHOVELS

Day by day more contractors and builders are discovering that the versatile tractor-shovel is a profitable and time-saving tool for most bulk material-handling and earth-moving jobs. Why have there been more "PAYLOADER" tractor-shovels built and sold than all other makes combined?

It is because HOUGH pioneered the *first* integrated rubber-tired loader more than 20 years ago, the *first* four-wheel-drive tractor-shovel over 11 years ago and the *first* unit-built crawler tractor-shovel specifically designed for shovel work

It is because HOUGH has developed most every feature and major improvement during these years. Items like the rear-mounted engine; bucket tip-back; the use of torque converters, power-shift transmissions and planetary axles.

It is because HOUGH's "balanced-design" gives better stability and keeps "dead-weight" at a minimum. The result is a better "horsepower-to-weight" ratio for top production.

It is because "PAYLOADER" units have a closed, pressure-controlled hydraulic system with dual filtering.

It is because all HOUGH four-wheel-drive units cool the power-shift transmission and torque-converter oil with a separate oil-to-air cooling radiator.

It is because HOUGH offers a larger selection of machines for specific jobs. More than 20 models in 8 different capacity ranges for your consideration.

It is because these machines are sold and serviced by the finest, most reliable and most completely equipped distributor organization in the whole wide world. Your HOUGH Distributor has these "performance proven" machines plus years of application experience to be of real assistance to you — why not contact him today?

HOUGH, PAYLOADER, PAYMOVER, PAYLOGGER and PAY are registered trademark names of the Frank G. Hough Co., Libertyville, Ill.

H-90 A favorite "PAYLOADER" model of many builders and contractors; several gasoline and diesel engine options to 163 hp.; operating capacity—9,000 lbs.; buckets to 5 cu. yds.

H-70 Another popular 4-wheel-drive size for all-around usefulness; 7,000 lb. operating capacity; buckets up to 3½ cu. yds. Gasoline and diesel engines up to 110 hp.

HOUGH®

THE FRANK G. HOUGH CO.
LIBERTYVILLE, ILLINOIS
SUBSIDIARY — INTERNATIONAL HARVESTER COMPANY

THE FRANK G. HOUGH CO.
762 Sunnyside Ave., Libertyville, Ill.

☐ Send data on all "PAYLOADER" models.
☐ Send data on Model_____ shown in this ad.

Name_____

Title_____

Company_____

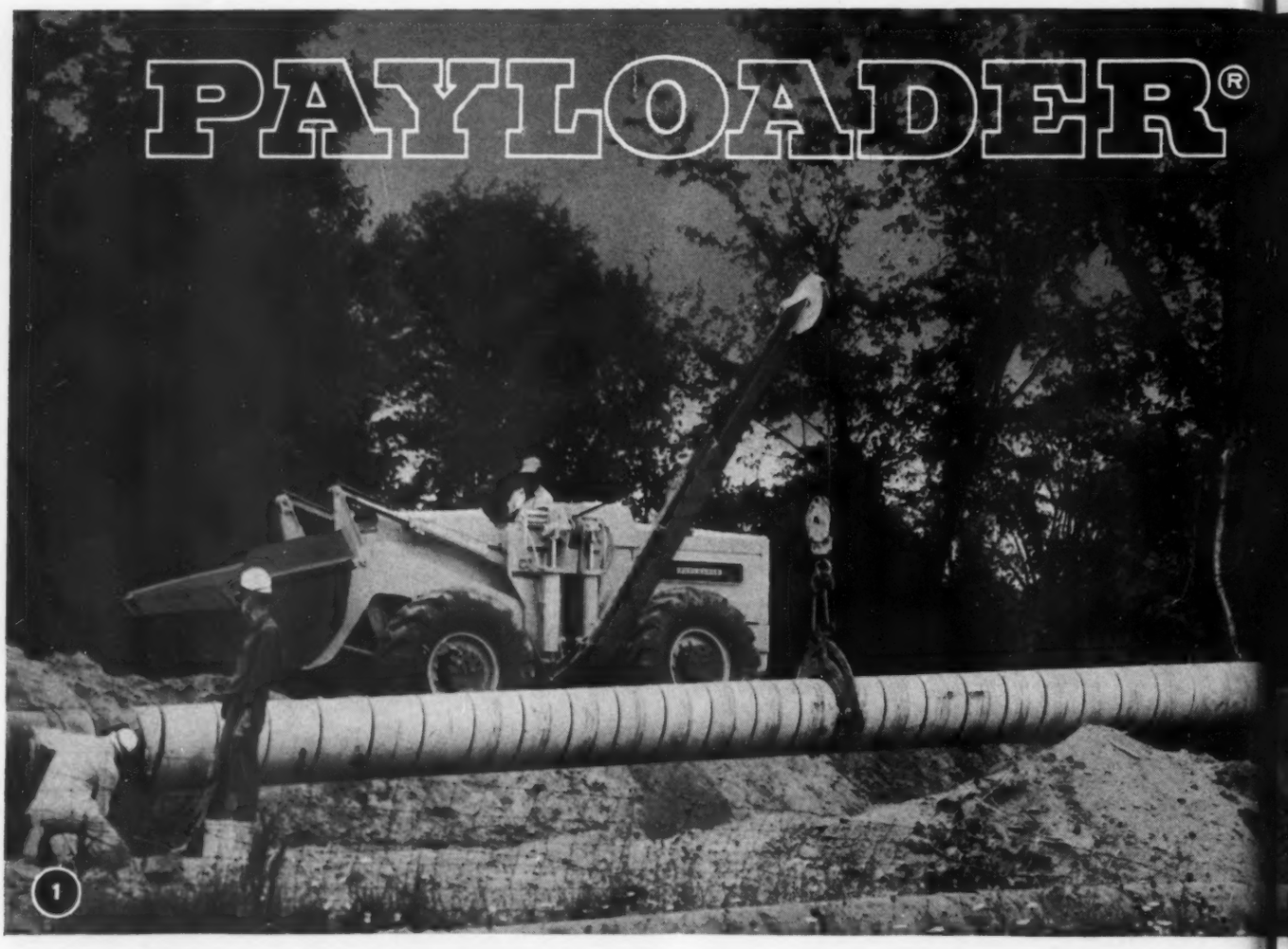
Street_____

City_____ State_____

1-B-1

For more facts, use coupon or Request Card at page 18 and circle No. 311

PAYLOADER®



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For more facts, use coupon on facing page or Request Card at page 18 and circle No. 312

MORE THAN A TRACTOR SHOVEL

No other tractor-shovel comes close to matching the all-around usefulness of a 4-wheel-drive "PAYLOADER" because it has the most complete selection of interchangeable attachments available, including several that are "exclusives" on "PAYLOADER" machines! These are *real working tools* that save time on-the-job and the high cost of single purpose machines:

1 SIDE-BOOM

Superior-Hough hydraulic boom lifts 5-tons, telescopes 10 to 16-ft. Does not interfere with bucket use.

2 HYDRAULIC BACK-HOE

Built exclusively for "PAYLOADER" by Wain-Roy. 190° working radius permits right angle dig and dump. Mounts front or rear.

3 FORK-LIFT

Forks adjust to fit varied size pallets or loose loads of lumber, sheeting, pipe, logs. Easily interchangeable with bucket.

4 ROTARY SNOW PLOW

Built by Ram for "PAYLOADER" tractor-shovels. Separate power unit drive. "V" and blade plows available also.

5 LEAF LOADER

Another "PAYLOADER" exclusive by Ram. Individual hydraulic motors power reel and conveyors. Picks-up 90% of bulk.

6 VIBRATORY COMPACTOR

Jackson vibrators efficiently develop specified densities in all granular soils. Electric motors on each of four 30-in shoes.

7 BLACKTOP SPREADER

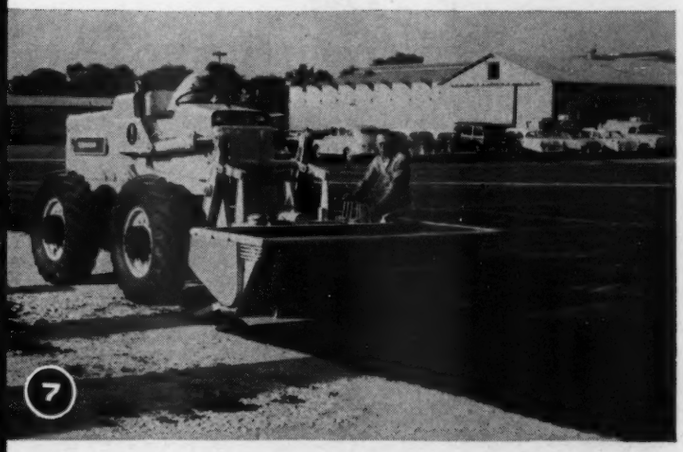
Exclusive Ram unit has separate power unit. Lays up to 8-ft. wide, adjusts 0 to 48-in., 0 to 6-in. deep. 2-cu. yd. hopper.

8 "FOUR-IN-ONE" BUCKET

Patented Drott bucket is a "PAYLOADER" exclusive on rubber. Does many shovel, clamshell, scraper and bulldozer jobs.

HOUGH®

THE FRANK G. HOUGH CO.
LIBERTYVILLE, ILLINOIS
SUBSIDIARY — INTERNATIONAL HARVESTER COMPANY



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THE FRANK G. HOUGH CO.
762 Sunnyside Ave., Libertyville, Ill.

☐ Send data on all "PAYLOADER" models and attachments.
☐ Send data on No._____ shown in this ad.

Name_____

Title_____

Company_____

Street_____

City_____ State_____

1-B-3

For more facts, use coupon or Request Card at page 15 and circle No. 812

For more facts on Insert, circle No. 31

Flying contractor takes a cue from commercial air lines

Vance Johnson, president of the Al Johnson Construction Co., and R. E. Engelhart, its vice president, find the Beechcraft invaluable for keeping in close touch with key personnel in the field.

Top men of Al Johnson Construction Co., Minneapolis, Minn., travel fast, and they travel safe.

They fly to projects from Maine to California in the company's twin-engine 6-passenger plane, and the company makes their flights as safe as those of a commercial air line.

They hire an experienced, full-time pilot who holds both A&E and ATR licenses and is qualified as an aircraft mechanic as well as a commercial pilot. He has complete charge of servicing and operating the plane. With 11,000 hours of flying time behind him, including time spent with a commercial air line, he knows the importance of keeping the plane in top operating condition and the importance of safe flying.

The pilot, Bill Mansfield, patterns maintenance and flying practices according to the standards of commercial air lines. To make sure he is in top condition, he takes a physical and pilot efficiency check every six months.

Plane built for safe flying

The plane itself is built for safe, long-range flying. With its two 450-hp engines, the Beechcraft Super 18 can stay aloft for six hours without refueling. When necessary, it can fly on only one engine. Normally, it cruises at 200 mph at an altitude of about 7,000 feet.

Instruments on the plane duplicate those in a commercial airliner. The plane is equipped with a dual-instrument landing system that makes it safe to fly at night and in bad weather. The plane's $30,000 worth of radio equipment includes one ADF receiver, two omni-receivers, and two transmitters.

In case the plane runs into freezing rain, there are pulsating de-icers on the wings and an alcohol spray for the props. If the pilot wants to get above bad weather, he can use special oxygen equipment and take the plane up to 18,000 feet.

Al Johnson Construction Co. took to the air in 1951. Its first plane was

Here's an Idea!

GAR-BRO helped cut costs in pouring concrete piers!

One contractor cut the time in placing concrete on this bridge job by planning ahead. Here, on these two bridge piers, note that he used three complete units comprised of Gar-Bro Collection Hopper and a string of Steel Chutes plus a Gar-Bro Bucket. He used the hopper and chutes to direct the concrete into the forms and prevent segregation.

His object was to prevent any delays by using one hopper and chute unit to place concrete in one pier, while the second one was set in place in the other pier, and the third one (see it hanging in rack between piers) was being shortened. Delays of transit mixers and the crane were minimized by rotating the hopper and chute units and shortening the chute line to the new level of the concrete in each pier.

It's a good idea to team up your Gar-Bro Concrete Handling Equipment to save time and cut costs.

See your Gar-Bro dealer or write for Catalog and Concrete Handling Manual today!

Gar-Bro Mfg. Co. — Los Angeles, Calif.—Peoria, Ill.

General Offices: 2415 E. Washington Blvd., Los Angeles 21, Calif.

GAR-BRO

The World's Most Complete Line of CONCRETE HANDLING EQUIPMENT

For more facts, use Request Card at page 18 and circle No. 313

NEW *Truco*® JOB-MATCHED SAWS AND BLADES CUT SAWING COSTS

LOOK FOR THIS MARK

TRUCO

Here's a quick, easy way to save money. On your next masonry sawing job, see your Truco distributor and get Truco JOB-MATCHED Blades—matched to *your* job for cutting speed, blade life, safety, economy. He has the exact combination that *you* want and it will save you time and money. See those new Truco JOB-MATCHED Saws, too—the most versatile saws ever built. Write for distributor's name and literature. TRUCO MASONRY DRILLING DIVISION, Wheel Trueing Tool Co., 15B-3200 W. Davison, Detroit 38, Michigan

SEE OUR NEW PRODUCTS • BOOTHS 97-98-99 • M.C.A.A. SHOW

ASK FOR ON-THE-JOB PROOF

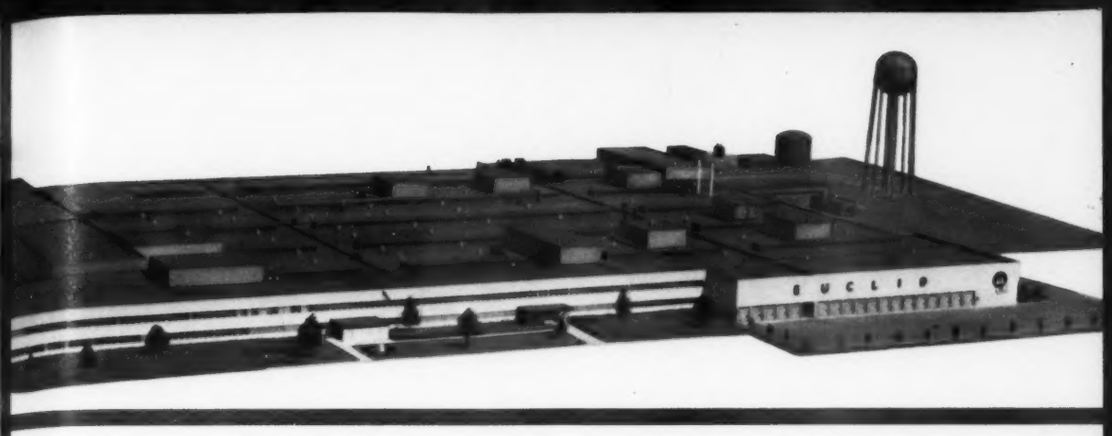
For more facts, use Request Card at page 18 and circle No. 314

BIG CRAWLER TRACTOR NEWS FROM EUCLID!

C-6 Crawler now in production at Euclid's new tractor plant

A new concept in crawler tractor design, the Model C-6 is the most recent addition to the modern line of Euclid equipment developed and job proved during the past 5 years. Like the big twin-power TC-12 tractor, as well as 5 new scraper models and 4 new rear-dump haulers, the C-6 has the power, speed and versatility to get more work done faster and at lowest cost. All of these new "Eucs" incorporate years ahead engineering that has been a major factor in maintaining Euclid's leading position in the construction equipment industry for many years.

Now a big modern plant at Hudson, Ohio, designed exclusively for the manufacture of Euclid crawlers, is in production on Model C-6 and TC-12 tractors. Here every facility is provided to assure a uniform high standard of product quality that pays off in dependable long life performance of Euclids on every job.



C-6 sets a new standard in 200 h.p. tractor class

Brand new in every way . . . in functional design, ease of operation, service accessibility and productive capacity . . . but a "veteran" of many thousands of operating hours on a wide range of actual jobs and thorough testing at the proving grounds. No other machine in Euclid's history has ever been so completely proved for productive capacity and long service life before the start of volume production.

With 211 net h.p. and job proved Torqmatic Drive, there's a smooth, steady flow of power to match the work load. Changes from any speed range to another and from forward to reverse and back again, are made under full power . . . there are 3 speed ranges in forward and reverse, with a top speed of 7.9 mph.

Dry type air cleaner, full hydraulic track tensioning, independently suspended track frames and final drives, rear mounted cooling system, fewer lube points, and "package" assembly of major components are some of the other C-6 features that make this "Euc" outstanding for easy servicing and maintenance.

Compare and prove for yourself...

THE "EUC" C-6 IS THE LONG-NEEDED "STEP AHEAD" IN CRAWLER DESIGN

When you check all the things that really count in crawler performance . . . easy operation, maneuverability, power and traction for tough work, and minimum downtime . . . you'll see why the new C-6 is your best investment in the 200 h.p. class. No matter what the job is . . . heavy dozing and ripping, push-loading big scrapers, pulling heavy loads, stripping, land clearing, or handling stockpile assignments . . . the versatile C-6 cuts costs and gets more work done faster.

The Euclid dealer in your area will be glad to show you why the C-6 is your best bet for increased production at lowest overall cost.

EUCLID DIVISION OF GENERAL MOTORS
Cleveland 17, Ohio

EUCLID (GREAT BRITAIN) LTD.
Lanarkshire, Scotland

. . . a complete line of equipment for heavy earthmoving, mining, logging and many industrial operations . . .

Printed in

a Cessna 195 single-engine job. Equipment superintendent George Armstrong piloted the plane in addition to his regular duties. A couple of years later, the firm bought a Cessna 180 and hired a full-time pilot.

The two small planes proved inadequate for the country-wide scope of the company's flying operation, and early in 1956 it purchased a Twin Bonanza. After a year of flying this 5-passenger plane, Al Johnson decided it needed a larger plane with a greater flying range, and it bought the Beechcraft Super 18 at a price of about $150,000.

Plane links office with field

In a company that may have $50 million worth of work going on in different sections of the United States, the plane is a vital link between the Minneapolis office and the construction shack. By flying from project to project, job sponsors of the home office can keep in close touch with work going on in the field. In a matter of a few hours, they can be on the job lending their assistance and advice to the superintendent. Both Al Johnson, chairman of the board, and his son Vance Johnson, company president, make frequent trips in the plane to keep in touch with field personnel.

In addition to keeping company officials in contact with the field work, the plane has many other uses. It carries top men to prebidding conferences where bids are assembled for joint ventures. From the plane, company officials can get a bird's-eye view of a project, and this is often helpful in a prebid investigation. The Super 18 can fly home-base men into a job conference requested by the Corps of Engineers.

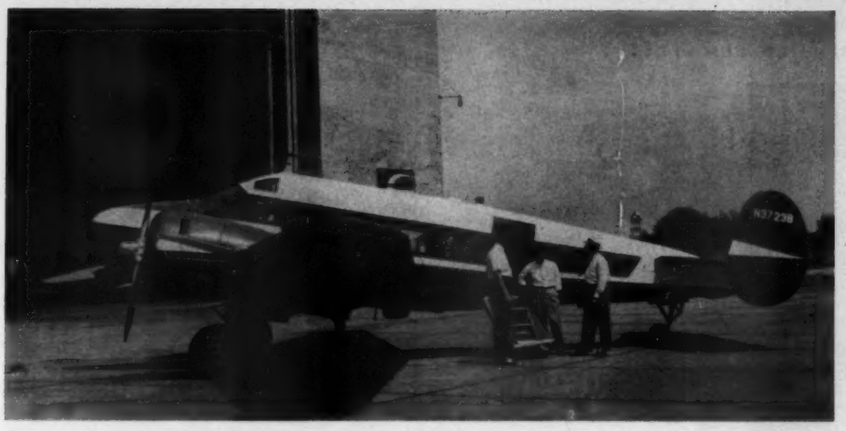
During 1958, the plane logged a total of 110,000 air miles and about 286,300 passenger miles. Trips are planned to fit the schedules of as many men as possible.

Unlike a small single-engine plane, the Super 18 cannot land on an improvised strip on the project. It can, however, land at small airfields that are generally a short drive from the job.

The plane often beats the time of commercial air lines. In the company plane, for example, it takes only 1½ hours to fly from Minneapolis to Chicago. The plane lands at Meigs Field on the lake front, just a short distance from downtown hotels. Making the trip on a commercial air line would have taken two hours longer, counting the time needed to drive from outlying O'Hare Field to a downtown hotel.

On the longer trips, the Super 18 gets key men around to the projects without wasting any time. Vance Johnson once made a 3-day trip that took him from Minneapolis to an aluminum-plant job on the Texas Gulf Coast, a lock and dam in Alabama, a powerhouse in Nashville, and then back to the home office. On the 3-day trip, covering about 3,000 air miles, he was able to spend at least half a day on each of the three jobs.

THE END



Officials of Al Johnson Construction Co., Minneapolis, return to Wold-Chamberlain Field in Minneapolis after a prebid conference in Chicago. With the Beechcraft Super 18 twin-engine plane, the time to a Chicago hotel is two hours less than if they took a commercial flight.

To every contractor who has to make a profit this winter
Rugged trench hoe digs through blasted rock and frozen earth at height of Montreal's harsh Winter.

AT MINUS 25 degrees, Manitowoc 1¼-yd. hoe trenches 200 feet each 10-hour shift in frozen, blasted rock

Despite severe temperatures hovering between 20° to 25° below zero last winter, this 1¼-yd. Manitowoc Trench Hoe averaged 200' of dynamite-blasted rock and frozen earth each shift for Civil Construction, Inc. of Montreal, Quebec.

ROCK ALL THE WAY

The job involved two major sewer projects for the Corporation de Montreal Metropolitan (Metropolitan Commission for Public Works) covering over 22,000 feet of sewer trench budgeted at a total cost of $355,000. Each trench was excavated 10 to 12 feet deep, and 8 feet wide. Every foot of the job was in quarry rock that had to be blasted before the Manitowoc could move in to work.

NO REPAIRS

Taking the severe weather and tough digging in stride, the hoe put out top yardage that would have been good even under ideal working conditions — and with minimum service and attention. On this point Mr. Paul F. Tremblay, Vice President of Civil Construction, Inc., said, "We have spent almost nothing on repairs or maintenance for our Manitowoc hoe since acquiring it last Winter. At the same time, we spent over $28,000 in repairs and maintenance on our rigs of other makes. Yes, we are confident that this trench hoe will more than do its part in giving us profitable operation with a minimum of maintenance and repair costs."

Stabilize *your* profit picture this Winter with an excavator-crane that can keep the output "hot" even at minus zero temperatures. Get more information NOW about the big-yardage Manitowoc that best suits your business.

Manitowoc

SHOVELS 1¼-6 YDS. • CRANES 25-125 TONS

MANITOWOC ENGINEERING CORP. PASTE ON POSTAL CARD
(A subsidiary of The Manitowoc Company, Inc.)
MANITOWOC, WISCONSIN Dept. C&E

Send complete information on:
☐ 1¼-yd. ☐ 1½-yd. ☐ 2-yd.
☐ 2½-yd. ☐ 3-yd. Trench Hoe
☐ Other excavators to 6-yds.
☐ Cranes from 25 tons to 125 tons

NAME
TITLE
COMPANY
STREET
CITY STATE

For more facts, use coupon or Request Card at page 18 and circle No. 316

Concrete paving rolls out on Interstate at rate of . . .

Five miles in five days

A section of Interstate 94 between Detroit and Chicago is put down in a gentle curve by a fast-moving paving train that took 5 days to pave 5 miles of the road. Koehring pavers work from the median strip; 6 inches of concrete is struck off by a Jaeger spreader, then wire-mesh reinforcing is laid.

Placing over 5 miles of concrete pavement in five days calls for a combination of good management, well trained men, and plenty of the right kind of equipment.

Pierson Contracting Co., Saginaw, Mich., had this winning combination when it placed 26,526 feet of 9-inch ×24-foot reinforced-concrete pavement in five consecutive working days, including a top day of 6,244 feet in 12 hours.

The record was established on an 11-mile stretch of Interstate Highway near Hartford, Mich. The 4-lane divided highway will become a part of Interstate 94, connecting Detroit with Chicago.

John S. Pierson, president of the construction company, feels that setting up the job right is the most important factor in getting high production. The batch plants—on this project there were two—should be set up to minimize the haul distances, according to Pierson, and production of the batch plant must match the capacity of the pavers in the train. In other words, it must be a balanced operation, with each piece of equipment and each man contributing to total job production.

Two batch plants

Pierson is a great believer in the short batch haul. To keep the haul distance for the batch trucks at a minimum, two Butler TX automatic batch plants were set up at carefully selected sites along the job site.

The plant closest to the paving operation furnished the batches to the trucks. To avoid truck congestion at each plant and to assure an uninterrupted flow of aggregate, about 80 per cent of the material was stockpiled before paving started.

Trucks passing through the automatically controlled batch plant made four stops—one stop each for sand and cement, and two stops for stone aggregate. At each stop, three batches were dropped simultaneously to the three compartments of the Reo trucks.

Since space at the plant site was limited, three cranes, rather than overhead conveyors, were used to feed the aggregate bins.

Three pavers

Although Pierson does not as a rule put three pavers on the train, this job was set up for it. With the ramp work having to wait until the grade was built, all the equipment could be concentrated on the main traffic lanes.

The three Koehring 34-E pave operated from the median strip. G erally, the first two pavers placed bottom 6 inches of concrete ahead the first Jaeger spreader. After wire mesh was put down, the thi paver placed the top 3 inches ahe of the second Jaeger spreader. Ea paver was pushed to 95 per cent pacity and averaged approximately batches per hour.

Following the second spreader a General Road transverse finishe a Flex-Plane combination float-fi isher, and a General Road spra curing machine. A Rex power-driv burlap drag machine with a belti attachment followed the Flex-Pla rig.

Pierson's equipment is well mai tained. Competent grease crews

NO STAND-BY HERE

Men, machines and materials aren't held up because INTERNATIONAL 230 Series Trucks are built to hold up!

WATCH 'EM WORK! Frame side rails on INTERNATIONAL 230 models are double channel and heat-treated — offer a combined section modulus of 24.74. Engineered with extra heavy-duty cross-members, they take the twisting torture of potholes and gullies under maximum payloads . . . and come back for more.

SEE 'EM DRIVE! Proven "six" and V-8 gas or in-line diesel engines produce full-muscled power with up to 695 lb-ft. of torque. Power-matched four, five or 10-speed transmissions with three or four-speed auxiliaries are all-weather conditioned to pull ahead over all ground and grade conditions.

LOOK 'EM OVER! They've extra-rugged design from cha iron bumper and diamondette fenders to husky reinforced cross-member. You get longer with little maintenance in choice of off-highway four- and wheel models that mean more for less money!

over trucks and equipment daily. Trained mechanics at both the plant and the paving train constantly check for impending mechanical failure. They fix the little things before they become big things. On this job, four mechanics and a welder were kept busy.

According to John Pierson, "The equipment is no better than the men who run it. In paving, every rig must move or none can move. Consistently high production can result only from the teamwork of a crack organization with a certain esprit de corps. You can hire men, but you can't hire an organization. It has to be built. Most of our men began their paving work with our company and have stayed with us. We think this is because we have tried to recognize good men, give them a chance to develop, and advance them when we can."

Special batch trucks

The single-axle batch trucks used on the job are equipped with airplane tires on the rear wheels to provide traction in the sandy Michigan soil. Only one of the oversized tires was required on each side of the rear axle. The trucks, manufactured by Reo according to the contractor's specifications, hold three batches and have closed containers for the cement.

The construction company had its own method of handling the reinforcing mesh for the pavement. Rather than string the mesh alongside the forms, the company used a flat-bed truck on the outside shoulder to carry the mesh. As the truck followed the first spreader, men pulled the mesh off the truck and onto the concrete.

The second of the Koehring 34-E pavers generally works ahead of the first spreader, but here it fills in between the two Jaeger spreaders. A Reo truck is delivering batches. Following the Jaeger spreader are a General Road transverse finisher and a Flex-Plane combination float-finisher.

Although Pierson's record of 5 miles in five days is exceptional, the daily production during the course of the job was also high. Between 4,600 and 4,800 feet of pavement was an average day's run.

Pierson's general superintendent in charge of paving was Dave Stein. The job superintendent was George Popour. The resident engineer for the Michigan State Highway Department was Frank Gleason. THE END

Trip characteristics and traffic assignment

■ Thirteen papers on "Trip Characteristics and Traffic Assignment" have been compiled in Bulletin 224 from the Highway Research Board. Topics discussed are trends in travel to the central business district by residents of the Washington, D. C., metropolitan area in 1948 and 1955; continuous sampling method of conducting origin-destination surveys; report on analysis of urban work trips; a method of traffic assignment to an urban network; and land-use projections for predicting future traffic.

Other papers cover home-interview surveys and related research activities; traffic assignment using an electronic computer; use of IBM Port-a-Punch in origin-destination surveys; novel traffic-survey method utilizing vehicle lights; and application of O-D data in the Baltimore region. Concluding papers report on estimating and forecasting travel for Baltimore by use of a mathematical model; median-strip mass transit and related traffic characteristics on the Congress Expressway in Chicago; and land use in traffic generation.

Priced at $2.60, the bulletin may be purchased from the HRB, 2101 Constitution Ave., Washington 25, D. C.

Talcott, Dorsey Trailers in financing agreement

■ James Talcott, Inc., New York City, will cover the financing of installment sales of Dorsey Trailers, Inc., Elba, Ala. Under the program, Talcott will handle retail and wholesale financing for Dorsey and its distributors. This includes checking credits, collecting retail paper, and other details.

ry 'em for all they're worth!
Get complete details on a demonstration of an INTERNATIONAL 230 series model at work on your job. See your INTERNATIONAL Dealer or Branch now!
When only a six-wheeler can do the job right, only INTERNATIONAL offers 84 ways to go.

INTERNATIONAL® TRUCKS WORLD'S MOST COMPLETE LINE

International Harvester Company, Chicago
Motor Trucks • Crawler Tractors • Construction Equipment • McCormick® Farm Equipment and Farmall® Tractors

For more facts, use Request Card at page 18 and circle No. 317

A Le Roi 125 compressor on a bridge near Orange, Texas, powers the chipping hammers and equipment placing the mortar during the repair operation on the 510-foot-long span. The compressor is easily pulled over the highway by the crew's Dodge pickup.

Pier-cap repair with epoxy resin

An epoxy resin is an amazing kind of glue.

It sticks two pieces of concrete together with a strength greater than that of the concrete itself. It sticks old concrete to new concrete. It bonds fresh mortar to old concrete. It bonds concrete to steel.

Within the past several years, epoxy resins have been used successfully by a number of state highway departments as a means of repairing or renovating concrete pavements.

In California, the adhesive has been used to bond extruded as well as precast curbs to concrete highway pavements. It has been effective in cementing reflectorized concrete raised bars (jiggle bars) to highway surfaces. It has been used for repairing spalled areas on bridge decks and concrete roads. It has also been used for grouting steel bolts to old concrete.

The Texas State Highway Department has made use of the special glue to repair some badly spalled pier caps. The repairs were made to a 7-year-old bridge on U. S. 90 (now Interstate 10) east of Orange, Texas. The bridge, which had a deck formed with long steel pans, contains seventeen 30-foot spans. Each bent of the 61-foot-wide bridge consists of 8 concrete piles rising to a poured-in-place cap.

The damage generally occurred on the pier caps that supported the two fixed ends of the simple spans. On these piers, the cap was joined to the two pan-type slabs by two rows of ¾-inch dowels. Normally, the spalling occurred on only one side of the cap. The caps under the expansion joints suffered no damage.

The movement of the deck slabs, pulling on the dowels, caused chunks of concrete to break away from one side of the cap. Nobody knows for sure what caused the movement of the deck slabs. It is believed that deep settlement in the ground may have made the pile bents drop slightly, causing the displacement; it is also possible that there were not enough expansion joints in the deck.

First try is unsuccessful

At any rate, it was clear that the caps needed to be fixed. The maintenance forces of the Beaumont district first tried patching with mortar, using a resinous water emulsion to bind the material to the cap after the dowel bars were cut. This attempt was not successful because the adhesive was soluble in water. Water, dripping through the contraction joint above the pier cap, penetrated the area between the fresh mortar and the old concrete. Since the water dissolved the adhesive, the mortar broke away from the pier cap.

New adhesive tried

They next tried a similar method using a waterproof adhesive. Called Uniweld, it is a combination of epoxy and nylon resins. The product is manufactured by Permagile Corp. of America, Woodside, N. Y.

In order to allow for the movement of the deck slab, the dowel bars connecting the cap to the deck were exposed and cut. The surface of the spalled area was then painted with Uniweld. The cap was rebuilt by

GETS THE JOB DONE!

The NAYLOR Heavy-duty Wedgelock coupling makes a positive connection—securely anchored in standard weight grooved ends. A hammer is the only tool required to connect or disconnect it. Low-pressure type also available.

When you need pipe lines for handling water or air, for moving material, or for ventilating service—it makes sense to look into the advantages offered by NAYLOR pipe and NAYLOR Wedgelock couplings.

Here is pipe that provides lightweight without sacrifice of strength and safety. It's easier to handle and install—particularly when you make connections with Wedgelock couplings.

If you're looking for faster installation and the kind of performance that gets the job done economically, this NAYLOR combination is for you.

Write for Bulletin No. 59.

NAYLOR PIPE Company

1270 East 92nd Street, Chicago 19, Illinois

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For more facts, use Request Card at page 18 and circle No. 318

Spalled pier caps are repaired with the use of epoxy resin. Deck slabs, pulling on dowels, caused pieces to break away from one side of the cap. After dowels are exposed and cut, the spalled area is brushed, blown clean, and painted with a freshly mixed Uniweld.

Using a Bondactor, a workman sprays a mixture of sand, cement, and water onto the "painted" surface of the spalled area. The mixture is applied in layers. The epoxy resin bonds the new mortar to the old concrete with more strength than that of the concrete itself.

C. H. Brown, Beaumont district construction engineer, points to a crack where an original break in a beam end was fixed with Permagile epoxy resin. The second break, made 7 days later with this testing machine, occurred not at the glued joint but a couple of inches higher.

spraying on a mixture of sand, cement, and water.

Proven by test

To make sure the new glue was all that it claimed to be, C. H. Brown, the district construction engineer, ran a few tests on it himself. He took one of the broken halves of a test beam and painted the broken end with the adhesive. Using pneumatically placed mortar and a form, the beam was built back to its original size. After seven days, the beam was broken with a testing apparatus. It broke at about 630 pounds, but not where the mortar joined the old concrete. The test was made five times with similar results.

In another series of tests, Brown glued together two previously broken beam ends. Using Permagile (a 100 per cent epoxy resin), he painted both ends of the original fracture, then stuck them back together again. After seven days, the beam was broken. It did not break through the original fracture. This indicated that the glue held the concrete together with more strength than that of the concrete itself.

Bridge repair

Satisfied that the adhesive would get the bridge job done, Brown put the district maintenance force to work. Using air chisels, powered by a Le Roi 125 compressor, the men chipped away the previously placed mortar. They also exposed and cut the vertical dowels on the side of the cap where the spalling had occurred.

The surface of the cavity was then brushed and blown off to receive the Uniweld. The adhesive, which comes in two cans, was mixed together shortly before it was applied. The viscous fluid was then painted on the clean surface of the cavity.

About 15 to 30 minutes later, the mortar was applied. A Bondact air gun was used to spray the mixture of sand, cement, and water in thin layers to build up the pier cap.

Repairs made with epoxy resin are holding up well, and the department anticipates doing additional work with the material in the future.

This maintenance and experimental work was done under the direction of W. E. Simmons, the Beaumont district engineer. THE END

Jobs Finished ON TIME with SUPERIOR

Interstate Highway Bridge—Iowa

Prescon Hangers in Position

Illinois Toll Highway Bridge

Efficient and Fast Forming of Bridge Abutments, Approaches, Interchanges, and Decks with SUPERIOR Concrete Accessories.

Building of today's overpasses, interchanges, and related projects require the latest in engineering advances and construction techniques. . . . And with increasingly keen competition on all types of concrete construction, contractors have found that the efficient forming methods of SUPERIOR Accessories offer all-important bidding advantages.

When you need form hangers for decks, threaded coil ties for walls, or heavy-duty screed supports for heavy screeding equipment, specify SUPERIOR and you'll finish the job on time! The jobs shown here used the SUPERIOR Accessories illustrated below.

Our experienced engineering service is available to prepare form layouts, estimates and quotations. This comprehensive service is offered free.

Photo Credits: Marquette Cement Co.; California Division of Highways; Kenny Construction Co.; Illinois Toll Highway Commission

For Details request a copy of 6-page BULLETIN BB-458

Vallejo, Calif. Interchange

Deck Supported with Superior Hangers

Chicago-Calumet Skyway

SUPERIOR Concrete Accessories, Inc., 9301 King St., Franklin Park, Ill. A Suburb of Chicago

NEW YORK OFFICE 39-01 Main St., Flushing 54, N. Y. / HOUSTON OFFICE 4101 San Jacinto, Houston 4, Tex. / PACIFIC COAST PLANT 2100 Williams St., San Leandro, Calif.

For more facts, use Request Card at page 18 and circle No. 319

One Bucyrus-Erie 71-B shovel handles all loading out for the Euclid end-dumps taking broken rock from a cut on a section of Interstate 24 in Tennessee. Two drills work at the top of the berm. The job calls for excavation of over 800,000 yards of rock and a million yards of earth.

Interstate contractor makes good time with . . .

Two drills and a shovel

Over 800,000 cubic yards of rock and a million yards of earth are being excavated at a rate of 3,600 yards per 10-hour shift for a highway job, and only one shovel is being used. This production, being maintained through two 10-hour shifts per day, is keeping a $1,900,000 interstate project ahead of schedule.

This new 8-mile section, part of Tennessee's Interstate 24, runs almost parallel with U. S. 70S from the Davidson County line to about two miles outside of Nashville's city limits.

Equipment spread

Odom-Purcell, Inc., Nashville, the contractor on this grading and drainage project, is using a Bucyrus-Erie 71-B shovel with a 3½-yard bucket to

Revised lab manual on soil mechanics

■ The second edition of "Laboratory Manual in Soil Mechanics," by Raymond F. Dawson, is available from the publisher, Pitman Publishing Corp., 2 W. 45th St., New York, N. Y. The price is $4.

Subjects covered are tare weights and calibration of shrinkage molds; standard method of determining per cent moisture; taking samples of disturbed soil; preparing samples of disturbed soil for tests; centrifuge and field moisture equivalent; plastic limit; and liquid limit—hand and mechanical methods. Also discussed are plasticity index; shrinkage determinations on soils; calculation of shrinkage factors; classification of soils; mechanical analysis of soils; standard compaction and penetration resistance test; determination of density of material in place; and absolute specific gravity.

The book also covers the consolidation test; permeability; unconfined compression test; direct shear test; triaxial compression test; and California bearing-ratio test. Data sheets are found at the end of the manual. Tables, diagrams, formulas, and graphs supplement the written material.

HRB report on pavement design in frost areas

■ "Highway Pavement Design in Frost Areas, A Symposium: Part 1, Basic Considerations" is available from the Highway Research Board, 2101 Constitution Ave., Washington 25, D. C.

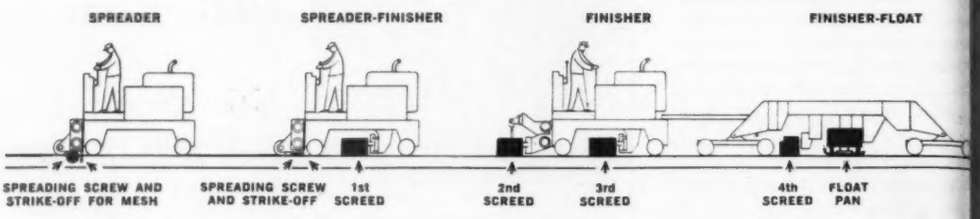
Bulletin 225 contains data on the mechanism of frost heaving in soils; the factor of moisture in frost action; frost penetration; relationship to air temperature and other factors; the factor of soil and material-type in frost action; and frost action in soils: a symposium analysis.

This bulletin costs $2.60.

Armco Drainage appoints

■ George B. Hutchinson has been appointed manager of production engineering on the Middletown, Ohio, headquarters staff of Armco Drainage & Metal Products, Inc.

3 OPERATORS, 4 MACHINES — TODAY'S COMPLETE TEAM FOR NON-STOP 2-COURSE PAVING



LOOK AT THE SAVINGS YOU MAKE WITH THIS JAEGER 4-SCREED TEAM

Fully-integrated paving train for 20' to 26' slab gets faster production and smoother final finish, with smaller crews.

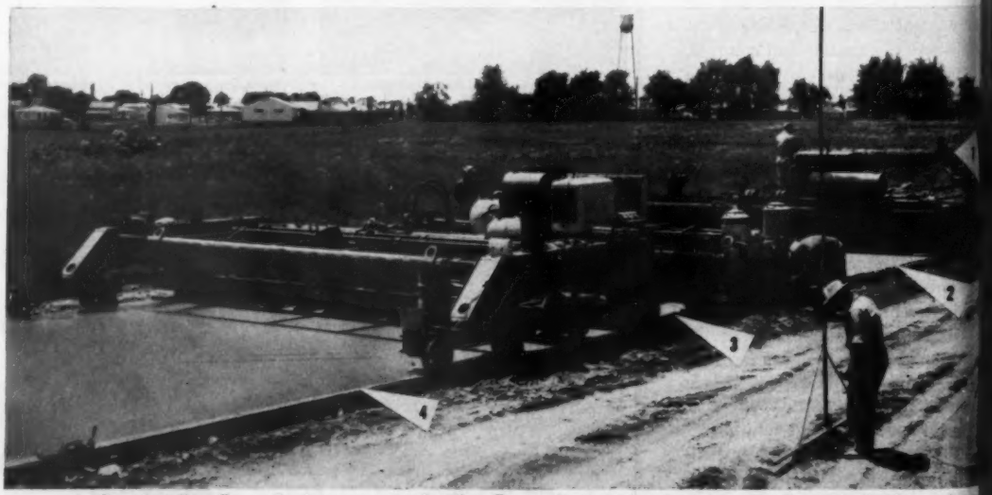
This is how low-bid contractors are saving important dollars in their paving operation: By using the lead Spreader on base course, followed by the Jaeger Spreader-Finisher, tandem-screed Finisher and Finisher-Float on top course, three operators now lay and finish reinforced slab in a steady, forward progression as fast as pavers can pour. Furthermore the finished surface is machine-perfect under the straightedgers, ready for burlap drag and cure.

On full depth slab, where no mesh is needed, the base Spreader and its operator are eliminated. *Only 2 men are then needed* to spread, strike-off, give a 4-screed finish and final floating with suspended pan. This is possible because the same operator controls the Finisher and the Finisher-Float. (See diagram above).

Saves Overtime, Cuts Costs

Having the first finishing screed on the Spreader-Finisher permits precision strike-off of material ahead of the Finisher. Thus, any excess or deficiency of material shows up while it is still easy to correct and the Finisher works under ideal conditions at all times.

The fast, continuous forward progress maintained with this Jaeger paving team insures finishing each day's run immediately behind your paver. The saving in time and personnel, and minimization of hand work behind the machines, result in the lowest labor costs enjoyed today on highway and airport paving. Equally important, the slab produced by this Jaeger method of screw spreading and final finishing with suspended screed and float has a uniform strength and surface smoothness superior to pavements laid by any other method.



1: Rough strike-off 2: Accurate screed strike-off 3: Precision finish 4: Ready for burlap and cu

excavate the rock; two Gardner-Denver drills—a 123 Air Trac, and a 143 mounted on a Cat D8 tractor; three Euclid TDT-22's and two Gar Wood scrapers for the earth excavation; three Euclid 27-ton rear-dumps; and three Cat tractor-dozers—a D9 and two D8's.

The 800,000 yards of rock is scattered throughout the length of the job. The largest concentration is in a 47-foot cut involving the removal of over 180,000 cubic yards.

Odom-Purcell uses the pair of drills to sink the blast holes ahead of the shovel excavation. The Gardner-Denver 123, powered by a G-D 600-cfm compressor, sinks 3½-inch-diameter blast holes while the 143, powered by a G-D 900-cfm compressor, sinks 4½-inch holes. The contractor, using quarry techniques, is sinking and blasting the holes the full depth of the cut.

The larger-diameter hole is driven in a 13×15-foot drill pattern, while the 3½-inch hole has a tighter 11×13-foot pattern. Hercules Gelamite 60 per cent dynamite is being used with electric blasting caps. The contractor is averaging about one cubic yard of blasted rock per 0.6 pounds of dynamite used.

Rock fill

Odom-Purcell is using all the roadway excavation as fill. The scrapers are hauling the earth from cuts, as well as 400,000 yards of borrow, to the fill areas. The rear-dumps, loaded by the Bucyrus-Erie 71-B shovel, haul all the rock excavation to these areas.

The rock is spread in 3-foot lifts by the tractor-dozers as it is dumped. The Cat D9 is equipped with the new-type lifetime-lubricated rollers, idlers, and carrier rollers. It also has the new dry-type air filters, which have been proved 99 per cent efficient. This type of equipment requires less on-the-job maintenance which, normally, makes the machine idle for some time.

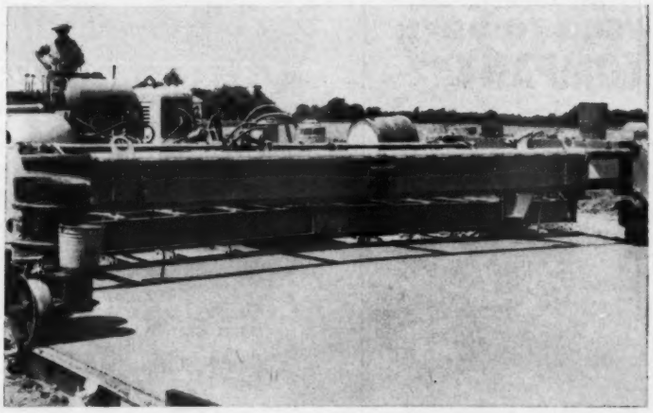
The dozer blade on this Cat D9 is equipped with hydraulic tilt cylinders that increase the capacity and the versatility of the blade.

Clarence Odom is the superintendent and Gene Odom the grading foreman for the contractor. R. A. Bruce is the resident engineer for the Tennessee Department of Highways and Public Works. THE END

Blast holes are sunk the full depth of the cut by a Gardner-Denver 143 drill mounted on a D8 and the Gardner-Denver 123 Air Trac, background. The 143 is putting down 4½-inch holes; the Air Trac, 3½-inch holes.

DUAL HYDRAULIC SCREWS: Remix and spread stiff concrete faster, easier, and more accurately than any other device. Operator merely "plays" hydraulic levers to control his independent right and left screws, speed up, slow down, reverse rotation and lift or lower. Easily handles largest paver production. Screw spreading, originated by Jaeger, also remixes and densifies the concrete and compacts it solidly against subgrade and forms, eliminating segregation and honeycomb and insuring highest uniform strength.

4-TO-1 CORRECTION AND THE FINAL KISS: The Jaeger Float-Finisher can be towed by, and operated from, *any* make of finishing machine. Its narrow 8" oscillating screed with hinged end shoes, and its 30" wide float pan, are both suspended, making them independent of adjacent form level, and bogie front and rear axles provide a 4-to-1 ratio of correction. Smoothness specified for Interstate and State highways and U. S. Engineers airport paving is easily obtained. Separate engine and hydraulic system, mounted on the finishing machine, operate the screed drive and screed and pan lift on the Float-Finisher. Universal type quick-crown-change in both screed and pan adjust for *any* type crown with one turn of a lever. Machine can be detached in 2 minutes for moving or independent use of the finisher.



Now it's easy to lay flared and super-elevated slab on interchanges

12'-18' All-Hydraulic Spreader-Finisher has 6' of infinite self-widening adjustability and diagonally adjustable quick-crown-change screed. Operator adjusts width setting of screw shaft as well as wheels to any flare in slab without stopping. Can also adjust its diagonal finishing screed to any angle needed to move material up-hill on super-elevated curves and finish solidly against the higher form. Screed crown can be raised or flattened by turning a ratchet lever. Dual hydraulic spreading screws.

12'-18' All-Hydraulic Finisher can be supplied with same features of self-widening adjustability and diagonal rear screed, and quick-crown-change and infinitely adjustable end shoes on both screeds. No other machine offers equal advantages for finishing flared and offset widths, pitched slab, super-elevated curves or work requiring frequent changes of lane.

For complete catalogs and data on any of these machines, see your Jaeger distributor or write us.

THE JAEGER MACHINE CO., 701 Dublin Avenue, Columbus 16, Ohio

For more facts, use Request Card at page 18 and circle No. 320

A new truck-mounted Bucyrus-Erie 30-RS drill sinks 6¼-inch-diameter holes as it is being demonstrated on the project. The drill is equipped with its own compressor, drill steel frame, adjusting legs for even alignment, and dust collector.

Highway Trailer names; opens factory branch

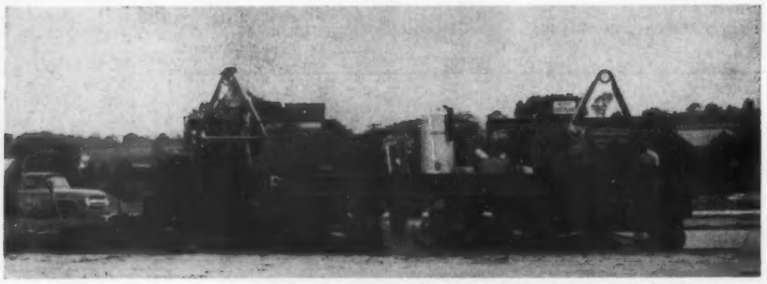
■ Horton Fick, former vice president of Dorsey Trailer Co., has joined Highway Trailer Co., Edgerton, Wis., as special assistant to the chairman of the board.

The company has opened a factory branch building at Ave. I and South St., Newark, N. J. Located on a 3-acre site, the plant has a 21,000-square-foot area.

Arthur B. Cascone is manager of the new branch; Max Kraft, assistant branch manager; and J. R. Sweeden, service manager. The branch will be the headquarters of Ray Rowitzer, Eastern regional sales manager.

A Worthington 34-E paver and a Blaw-Knox spreader make two passes to pave a lane of an interstate by-pass route near Clinton, N. J. The first pass brings the mix to a 6-inch depth so that reinforcing can be placed; the second completes the slab to its full 9-inch depth.

Fast mechanized spread paves interstate route



Transverse finishing and floating of the slab surface is done by this Heltzel Flex-Plane rig. It is equipped with two lead transverse finishing screeds and a rear shoe-type plate to handle floating. Use of this rig made it possible to dispense with a longitudinal float and extra operator.

To pave a 3-mile stretch of Inter state 78 bypassing Clinton, N. J., th contractor brought in a fast-movin concrete-paving spread that averag 2,000 linear feet of 12 and 13-foot wide pavement per 10-hour workday The contractor on this $3,589,00 project was Public Constructors, Inc Gloucester, N. J.

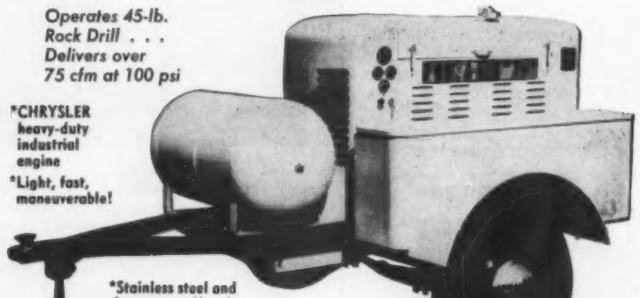
Preparing subgrade

Ahead of the paving spread, Publi Constructors used a Chicago Pneu matic air hammer, powered by a self

Built for Brawn . . . Priced to Save
GENERAL SUPPLY COMPANY

Porta-Air 75 COMPRESSOR

Operates 45-lb. Rock Drill . . . Delivers over 75 cfm at 100 psi



*CHRYSLER heavy-duty industrial engine
*Light, fast, maneuverable!
*Stainless steel and heat-treated beryllium copper compressor valves for longer life
*All instruments and controls conveniently grouped . . . all working parts readily accessible.
*Smaller compressors also available

SKID MOUNTED MODELS also available, at substantial savings. Priced as low as $1995 f.o.b. Kansas City; $2045 f.o.b. Sacramento.

PAY LESS TO BUY, TO OPERATE

Porta-Air develops enough power for almost any compressor needs, yet costs far less than big bulky units that cannot give the same speed or maneuverability. Evenly spaced power impulses give smooth air flow — enough for 80-lb. paving breaker or three tampers, or two clay spades, or 3/16" sand blast nozzle. Takes only 1½ gal. of gas per hour. Optional fenders and tool boxes.

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Industrial Compressor Division

GENERAL SUPPLY COMPANY

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1820 "D" Street, Sacramento, California — Phone Gilbert 3-5928 — TWX: SC-65

We invite inquiries for jobber-distributors

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THE QUALITY LINE OF DEPENDABLE TRAILERS FOR EVERY HAULING NEED!

MODEL XTT
Tandem axle tilt trailer (tow type), capacities through 20 tons.

MODEL PTX
Heavy-duty tandem with adjustable bolster. Telescopes from 16' to from tractor.

MODEL GXTT
Gooseneck type, tandem axle tilt-trailer. Capacities 14 through 22 tons.

MODEL KSO-D
Dual axle drop bed semi, capacities 15 through 30 tons. Drop deck or flat deck.

MODEL PX
Heavy-duty tandem axle spring mounted platform or float.

MODEL MSO-D
Multiple axle drop bed semi, capacities 35 through 75 tons. Drop deck or flat deck.

MODEL GPR
Removable gooseneck. Tandem, triple or trunnion axles. Flat or drop decks, or as beam trailers.

MODEL GPX
Tandem axle. Capacities through 35 tons. Drop or flat deck.

MODEL T-8-18
14 or 18 foot length between the wheel tilt trailer. 8-10 ton capacity.

MODEL TT
Heavy-duty tilt trailer. Capacities 6, 8 and 10 tons.

MODEL KS-F
Single axle flat bed semi, capacities 10 through 35 tons. Drop deck or flat deck.

MODEL GTX
Triple axle, 6 dual wheels. Capacities 25 through 45 tons. Flat or drop deck.

MODEL PX-O
Heavy-duty, self-loading tandem axle oil field float.

"Transportation Engineering A Specialty"

TRANSPORT TRAILERS INC.

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Send Today FREE!
NEW catalog showing COMPLETE line for your transportation needs.

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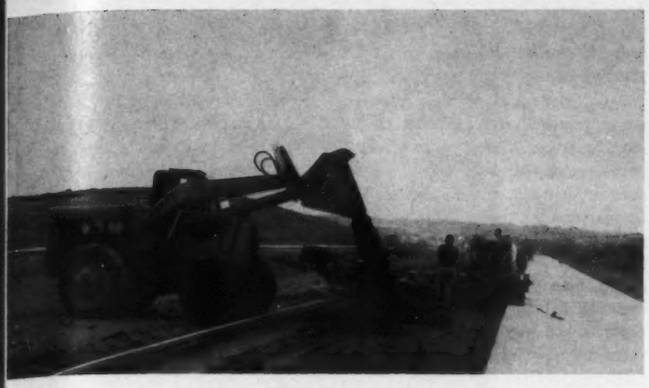
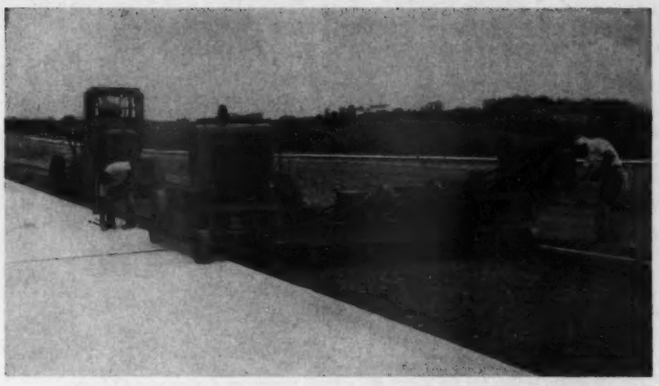


Low spots in the subgrade are filled in with material by a Hough Payloader. The 12 and 13-foot lanes of the new roadway are part of the interstate route that will bypass Clinton, N. J.



An Allis-Chalmers grader trims some material ahead of the Buckeye subgrader. The outside 12-foot lanes of a roadway were paved first so only one line of forms had to be placed for the 13-foot inside lanes.

propelled Le Roi Tractair, to drive the form stakes. Forms were set a minimum of 1,500 linear feet ahead of the paver at all times. By paving the outside 12-foot lanes of each roadway first, the contractor had only to set a single line of forms for the inside 13-foot lanes. A total of 8,500 linear feet of Blaw-Knox 9-inch keyed forms was used on the job.

A Hough Payloader, which delivered material to fill in subgrade low spots, and an Allis-Chalmers grader were used to form the proper grade between the forms. These rigs were followed by a Buckeye subgrader that trimmed the subgrade to the desired elevation. A Buffalo-Springfield 10 to 12-ton tandem roller was then used to compact the final grade.

Leading the paving train was a Worthington 34-E paver that generally rode outside of the forms. Water was supplied to the paver by 2 GMC tankers, while the concrete mix was delivered by seven batch trucks having two, three, or five-batch capacities.

A Blaw-Knox spreader with a rear full-width vibrator trimmed and vibrated the mix to a 6-inch depth. After this first pass, welded-wire reinforcing was placed. Both the paver and spreader had to back up to place additional concrete over the mesh to bring the slab thickness up to 9 inches.

During the second pass, the vibrator was used only to consolidate concrete adjacent to the transverse joints. Spaced 78 feet 2 inches apart, the contraction joints consisted of a premolded filler supporting longitudinal dowels placed on 1-foot centers across the slab width. A metal cap, placed over the joint filler, made continuous paving possible. The caps were later replaced with a temporary wood strip to provide for a straight and proper set of the concrete.

New-type finisher

Following the spreader was a new Heltzel Flex-Plane float-finisher that combines the transverse finishing operation with the floating of the slab

10-gallon cans and coolers are with riveted, easy-grip handles at 5, 20- and 25-gallon coolers have handles riveted on side.

MODEL FOR EVERY NEED

5- and 15-gallon utility type coolers are designed for limited floor space.

1½-, 2- and 3-gallon cans and coolers have heavy steel bails.

old down rack of heavy steel is easy to mount on truck body. Rubber grommets protect cooler.

HORTON
WATER COOLERS

PREFERRED BY EQUIPMENT DISTRIBUTORS AND CONTRACTORS ALIKE!

WIDE SIZE RANGE: 1½, 2, 3, 5, 10, 15, 20 and 25 gallon.

USED WORLD-WIDE by railroads, construction, trucking, utilities, highway departments, oil field, farmers, miners, sportsmen, etc.

RUGGED GALVANIZED CONSTRUCTION, many quality features: Chrome-plated recessed spigot. Double-locked seams. Perfect-fit lid. Rounded, seamless bottom. Solid bottom support.

PUROLINING, non-toxic inner coating on all models.

CUP DISPENSER BRACKET is standard on Heavy-duty and Stainless lined coolers.

• • •

STANDARD COOLERS feature thermotype double wall with dead air installation.

HEAVY DUTY COOLERS feature Styrofoam insulation. Choice of galvanized steel or stainless steel liner.

STANDARD CANS are the same as Standard Cooler, but without spigot.

SOME DISTRIBUTORSHIPS STILL AVAILABLE

HORTON EQUIPMENT COMPANY
P. O. BOX 2611 HOUSTON 1, TEXAS

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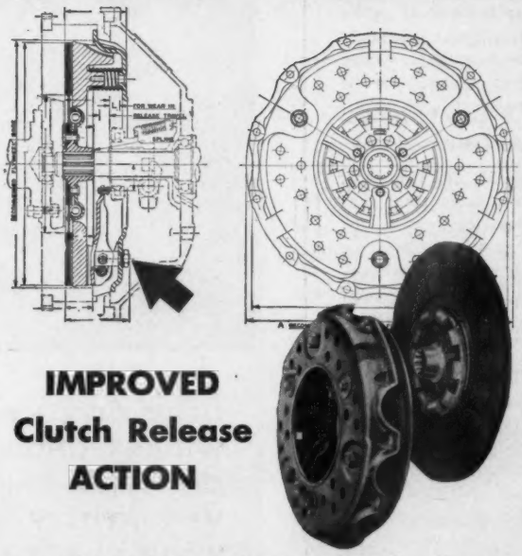
ROCKFORD

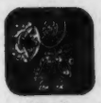


IMPROVED Clutch Release ACTION

This 14" RT ROCKFORD CLUTCH has patented levers that improve clutch release action, reduce friction and prevent lever throw-out. Patented rolling fulcrum pin action, in the release lever, results in much less wear and smoother release operation. The fulcrum pin automatically returns to its original position. Check with our engineers and let them show you how these patented features and many other advantages will make your equipment efficient and economical.

SEND FOR THIS HANDY BULLETIN Gives dimensions, capacity tables and complete specifications. Suggests typical applications.

ROCKFORD Clutch Division BORG-WARNER
314 Catherine St., Rockford, Ill., U.S.A.
Expert Sales Borg-Warner International — 36 So. Wabash, Chicago 3, Ill.



Small Spring Loaded

Heavy Duty Spring Loaded

Oil or Dry Multiple Disc

Heavy Duty Over Center

Power Take-Offs

Automotive Spring Loaded

CLUTCHES

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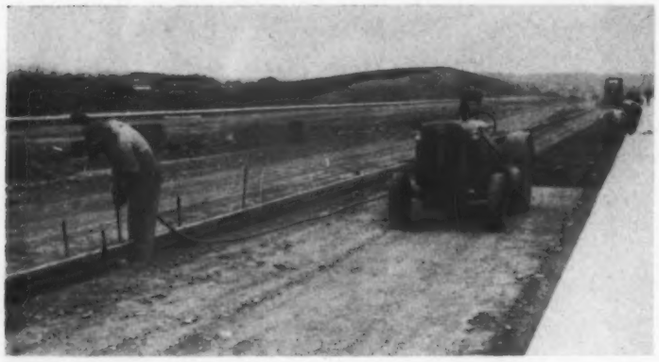


Form stakes for the 9-inch Blaw-Knox forms are driven by a Chicago Pneumatic air hammer powered by a Le Roi Tractair compressor. Final subgrade adjustments are being done in the background.

(*Continued from preceding page*)

surface. The machine, handled by a single operator, has two lead transverse screeds and a rear flat-type transverse plate that rides over the concrete surface.

By using the float-finisher, the contractor eliminated the need for the conventional longitudinal floating machine and the extra operator required. During the paving of the long straight alignments, where the joints were spaced farther apart, the contractor eliminated one hand finisher behind the Flex-Plane. The hand-finishing crew was able to work right behind the rig.

The concrete was cured by a spray of white-pigmented curing compound, which allowed forms to be stripped the following day. Public Constructors had an American truck crane on the job to handle the lifting, moving, and positioning of the paving spread when rigs had to cross structures or be transferred to adjacent lanes.

Batch plant

Certified Redi-Mix Co., Commack, N. Y., set up the batch plant that supplied the concrete mix to the paver. Located at a rail siding, the plant consisted of an Erie Strayer aggregate bin with three aggregate compartments and an enclosed cement compartment. A ground storage silo adjacent to the bin brought the total cement storage capacity to about 1,000 barrels.

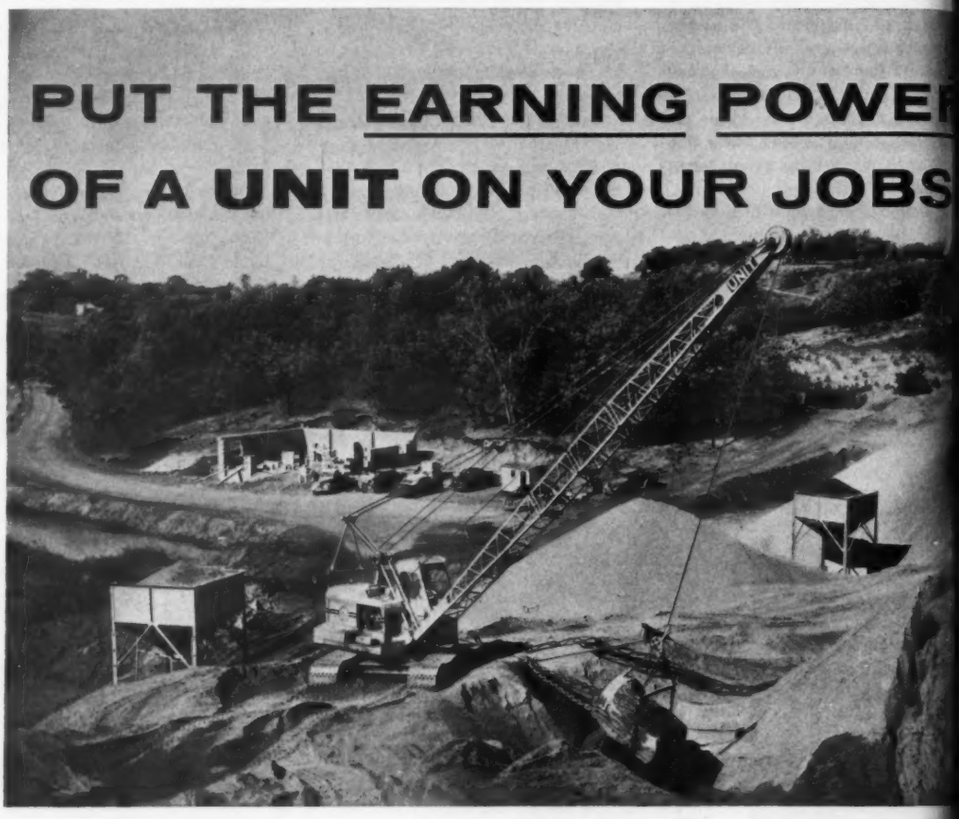
Sand, ¾-inch stone, and 1½-inch stone were delivered to plant stockpiles by truck. A Northwest Model 6 crane, equipped with a rehandling bucket, charged the aggregate bin compartments.

Cement, delivered by bottom-dump rail cars, was transferred to the enclosed bucket elevator through an undertrack hopper and a screw conveyor. A two-way chute atop the elevator fed cement to either the cement compartment or the storage silo. Cement was weighed by means of push-button controls actuating the air-operated compartment and weigh-batcher gates.

This one-stop batching setup charged both the aggregates and cement simultaneously, reducing [illegible] loading time per batch. Each ba[illegible] consisted of 870 pounds of cem[illegible] 1,314 pounds of sand, 1,887 pounds [illegible] ¾-inch stone, and 1,258 pounds [illegible] 1½-inch stone. Seven ounces of D[illegible] air-entraining agent was added [illegible] each batch at the paver to maint[illegible] a 4 per cent air content in the co[illegible] crete.

Joseph E. Boyd was the proj[illegible] manager; Lee Koger, the super[illegible] tendent; Micky McFadden, the bri[illegible] foreman; and Phil Logan, the pav[illegible] superintendent for Public Constru[illegible] tors. Emile Benoist was the resid[illegible] engineer in charge of road constru[illegible] tion, and Art Stetser resident en[illegible] neer for bridges for the New Jer[illegible] State Highway Department.

THE [illegible]



UNIT GIVES YOU THE WIDEST CHOICE OF CAPACITY, PRICE AND VERSATILITY TO MEET YOUR EXACT NEEDS

You can't do today's highly competitive jobs with obsolete equipment and stay in business. You need equipment that enables you to bid low enough to get the job—and efficient enough to turn your low bid into a profit.

The modern Unit line of excavators and cranes gives you bigger EARNING POWER because they are bigger producers on any job—faster cycling, easier operating—plus the built-in rugged dependability that keeps them on the job hour after hour, with negligible maintenance expense.

No other machines in their class perform like a UNIT, because none are built like a UNIT. No one else offers you a one-piece cast gear case with all gears, shafts and bearings operating in an oil bath; automatic traction brakes; straight-in-line engine torque converter drive; all disc type operating clutches; the liberal use of drop forged parts; heat treating on all essential components; full vision operator's cab — a combination of features you don't find even on the highest priced machines.

You'll find a UNIT is worth more when you buy it—and worth more when you sell or trade. Before you buy another excavator, compare UNIT—you'll be glad you did. Write for literature on the models shown or see your nearby UNIT distributor.

An American truck crane carries the B-K spreader across a completed bridge deck so that it can continue work on the 25-foot roadways.

ROCK FOR STILLING-BASIN WALLS is being loaded out by a Michigan Model 275A tractor shovel in Madison River Canyon in southwest Montana, scene of the August, 1959, earthquake. Plans for the basin call for three lifts of rock, each 4 feet deep, to be laid alongside the present channel, beginning at the point where it connects with the spillway. When this phase is completed, additional rock will be pushed into the channel, forcing the river into the stilling basin. The 4½-yard Michigan works two 11-hour shifts per day, seven days a week. Its daily average is 5,500 tons of rock.

CRAWLER SHOVELS
5 CONVERTIBLE MODELS

A rugged line of power-packed machines, designed for today's competitive bidding. Fast operating, simple in design and fully convertible for maximum versatility.

Model	Shovel	Hoe	Dragline	Crane	Clamshell
513C	½ Yd.	½ Yd.	½ Yd.	5½ Ton	½ Yd.
614	½ Yd.	½ Yd.	½ Yd.	8 Ton*	½ Yd.
617	⅝ Yd.	⅝ Yd.	⅝ Yd.	10 Ton*	⅝ Yd.
1020	¾ Yd.	¾ Yd.	¾ Yd.	12½ Ton*	¾ Yd.
1220	¾ Yd.	¾ Yd.	¾ Yd.	16 Ton*	¾ Yd.

*Maximum Crane Capacity.

TRUCK CRANES
4 CONVERTIBLE MODELS

Select the size to fit your needs — all with finest engineering and exclusive quality features. Mounted on rugged carriers for dependable performance on the job and between jobs.

Model	Crane	Shovel	Hoe	Dragline	Clamshell
513T	10 Ton	½ Yd.	½ Yd.	½ Yd.	½ Yd.
1014	15 Ton	⅝ Yd.	⅝ Yd.	⅝ Yd.	⅝ Yd.
1520T	20 Ton	¾ Yd.	¾ Yd.	¾ Yd.	¾ Yd.
360T	30-40 Ton	.....	.....	.....	.....

MOBILE CRANES
2 CONVERTIBLE MODELS

Self-propelled, one man controlled and operated, for on or off highway use. Big capacities, short turning radii. Convertible for greater versatility.

Model	Crane	Dragline	Shovel	Hoe	Clamshell
357	15 Ton	½ Yd.	½ Yd.	½ Yd.	½ Yd.
1520	20 Ton	¾ Yd.	.....	.....	¾ Yd.

UNIT
CRANE AND SHOVEL CORP.
Milwaukee, Wisconsin

UNIT CRANE AND SHOVEL CORP.
6309 West Burnham Street, Milwaukee 19, Wisconsin
Please send complete information on the following
Unit machines. Model..... Attachment.....
Name..... Title.....
Company.....
Address.....
City..... State.....

For more facts, use coupon or Request Card at page 18 and circle No. 325

Subbase and joints for concrete pavement

■ Three papers on "Concrete Pavement: Subbase and Joint Construction" are contained in Bulletin 229 from the Highway Research Board, 2101 Constitution Ave., Washington 25, D. C.

The first paper points out that uniformity of gradation was the one subbase quality found to have the most influence on pavement performance, with material of small maximum size generally performing better than coarser materials.

Correct construction procedures for various types of joints are discussed in the second paper. A theoretical approach to design of a road-joint seal is the topic of the third paper.

The $1 bulletin may be purchased from HRB headquarters.

Methods for estimating structural steel

■ "Estimating Structural Steel: Including Structural Aluminum and Miscellaneous Materials," by George A. Saunders, is a step-by-step guide to methods for compiling accurate costs and profitable bids on bridges, buildings, and other types of construction. It takes up both simple and complex structural jobs and follows the work through from the fabricating shop to final erection in the field.

The reader is shown how to estimate columns, beams, connections, built-up sections, girders, welding, rigid frames, irregular sloping, wall-bearing framing, etc.

Priced at $9.50, the book is available from McGraw-Hill Book Co., 330 W. 42nd St., New York 36, N. Y.

Off-highway haulers featured in L-W film

■ "Revolution on Wheels," a color 16-mm sound movie about the Haulpak off-highway truck has been released by LeTourneau-Westinghouse Co., Peoria, Ill. Haulpak is the name of L-W's line of 27, 32, and 80-ton off-highway haulers. The 15-minute movie shows units working on job locations around the country. Mechanical features are shown with diagrams and blueprints.

Film showings can be arranged through the nearest L-W distributor.

Air Reduction plant

■ A new air-separation plant at Baton Rouge, La., to supply high-purity liquefied industrial gases to the Gulf State area, is being erected by Air Reduction Sales Co., a division of Air Reduction Co., Inc., New York City. Costing over $2 million, the plant will have a production capacity of 30 tons of liquid oxygen, nitrogen, and argon per day. It is scheduled for completion in the spring.

RCA names engineer

■ Edwin M. Hinsdale has been named chief engineer of the Communications Products Department of Radio Corp. of America, Camden, N. J.

Superintendent Jim Fuller of McCree & Co., St. Paul, cautions two kids not to get close to paving operations along a residential street. This is the second paving job where Fuller sent mimeographed letters to residents of the area, explaining the nature of the work and the expected schedule. The result has been increased goodwill for the company—and a safe construction job.

A superintendent writes a letter . . .

and starts a public relations program for his company

Jim Fuller, superintendent for McCree & Co., glanced over at the tractor that was ripping up the old asphalt pavement. He frowned when he saw a couple of kids running alongside the tractor and shouted at them to get back on the sidewalk.

Then he walked over to the kids and started to explain to them how easily they could be hurt by heavy equipment at work. At this point their mother came charging up to him. "Look," she said, "we had a pretty good street here until your company decided to tear it up. I can't even get my car out of the driveway."

Jim turned to the woman and said, "Well, ma'am, we've a road to build here. And we've got to rip up the old road before we put in the new one. I'm afraid you're going to have to park your car in the next block for a couple of days. We don't want to cause you any more trouble than we have to, but we'd like to get this road built as soon as possible. And I expect you'd like that, too."

After Jim had helped her get her car out of the driveway, she was at least resigned to the construction, if not very happy about it. She even promised to keep her kids out of the way of the equipment.

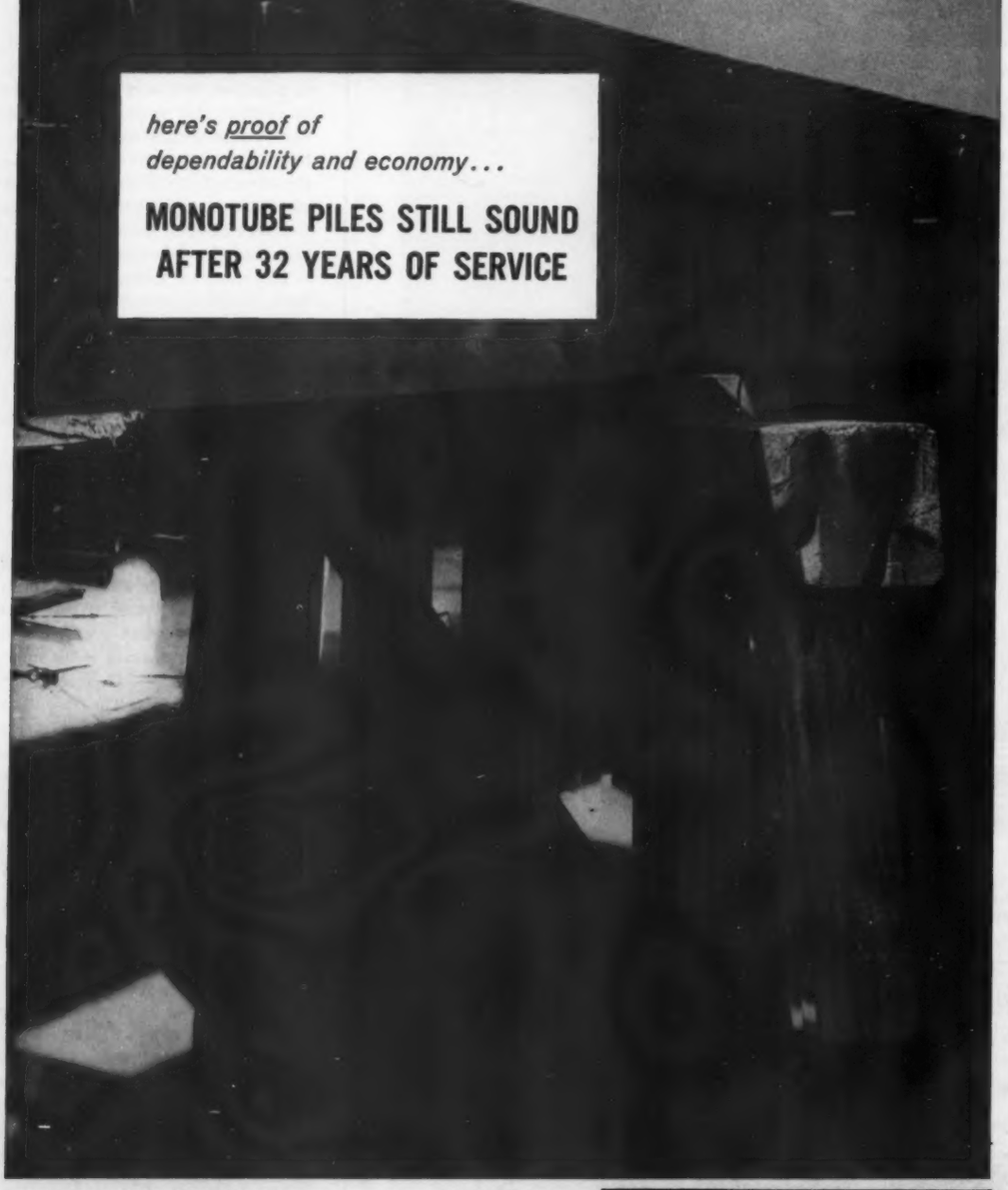
The letter

That night, Jim was thinking about the incident and wishing there was a way of telling residents in the eight blocks what the company was doing to the street and how long it expected the job to take. He figured the people would appreciate the information, and it would save him a lot of explanations to belligerent housewives.

Jim did find a way to tell people about the construction in the eight blocks along Fairview Avenue in St. Paul. He wrote them an open letter explaining the nature of the construction and the scheduling of the work. He warned parents about the dangers of heavy equipment and advised them to keep their children back on the sidewalks.

It was a friendly, courteous letter that asked the residents' cooperation during the construction. In return, the contractor promised to get the job done as quickly and safely as possible. With the enthusiastic support of his company, Jim had the letter mimeographed and distributed to all the residents along the street.

For McCree & Co. of St. Paul, Minn., this was a first experiment in public relations, and it was pleased with the results. Phone calls and letters from residents complimented



In 1928 the first steel Monotube foundation piles were installed on one complete bent of a Wheeling and Lake Erie Railroad trestle bridge. A recent inspection proved the installation to be in excellent condition . . . ready for many more years of service.

Tapered, fluted Monotube steel piles are available in lengths, diameters and gauges to meet every requirement. The Union Metal Manufacturing Co., Canton 5, Ohio; Brampton, Ontario, Canada.

UNION METAL
Monotube Foundation Piles

For more facts, use Request Card at page 18 and circle No. 326

the company for its consideration. McCree's good public relations was the subject of several write-ups in the local papers. The Department of Public Works of the City of St. Paul was so impressed by the results that it decided to try the same system.

Although the letter invited criticism from the residents, it was only occasionally that someone called the home office with a complaint. And then the complaint was generally made milder because of the letter. The construction went along smoothly without operations being slowed or upset by annoyed housewives and curious children. No children were hurt during the course of the job.

The first letter was followed by three more at about one-month intervals during the widening and resurfacing of the street. The letters reported on the progress of the construction and repeated the plea to keep the children on the sidewalk out of the way of the equipment.

Each letter was typewritten on a single sheet of paper. The company's name and address was at the top, and the letter was signed by the superintendent. About three hundred copies were distributed by hand to the doors of the houses on the street. (On subsequent jobs, enough copies were mimeographed to distribute them two blocks deep on either side of the street under construction.)

Friendly tone

The language of the letters was friendly and courteous. Here are a few excerpts:

"Since we will be working near you for the next few weeks, we want to get acquainted with you and let you know what we are doing. We intend to conduct our operations in such a way that we cause you the least possible inconvenience. In return, we hope that you will cooperate with us so that the job can be done as quickly and safely as possible. . . .

"Once again, we want to ask you to impress upon all children that they must not go beyond the sidewalk, ever. Most of us have children, too, and know how their natural curiosity makes them forget caution. We will be careful, and you will aid us by being careful yourselves and by appointing yourselves vigilantes to keep the children always at a safe distance. . . .

"With the unpredictable weather, we are rushing to early completion the middle 40 feet of concrete base, so that traffic can be carried safely and without trouble during the winter months, should the weather become so cold that the blacktop surface cannot be placed. In any event, we will have the concrete base, the crushed-rock shoulders, and the curbing done this fall. . . .

"To cause as little inconvenience as possible to you next spring, we have decided to do the storm sewer work from James to St. Clair this winter. We can do this work by closing off one block at a time and completing each portion before moving

(Continued on next page)

For more facts, circle No. 327→

Dad is as fascinated as the small fry by the Koehring 34-E paver. One rugged individual is getting a closer look, despite the plea from the company to keep children away from the work. Letters stressed how dangerous it was for children to play near operating equipment.

ALL NEW INSLEY Ⓜ TRUCK CRANE

20-ton capacity yet lightweight for travel

● The all new Insley Type M gets to the job and on the job *fast* with a minimum of preparation time.

Such features as simplified back-hitch gantry (requiring only minutes to raise or lower), independent boom hoist, pendant type suspension with floating bridle connections to boom for quick change of sections, hammer-head type boom point with three wide flange sheaves, and a modern wide-vision cab are but a few of the reasons why contractors are calling the Insley M the best all-round truck crane on the market.

Unmatched flexibility of job handling is available with such optional features as: power load lowering, third drum, remote control and shifting base for upper works.

There are many new design features inside the M's eye-pleasing, wide-vision cab. Ask your Insley Distributor about them today.

Insley owner Smith & Johnson, Inc., Indianapolis, Indiana, setting 8 ton 80' 7" bridge beams for highway overpass.

THERE'S AN INSLEY WORKING NEAR YOU

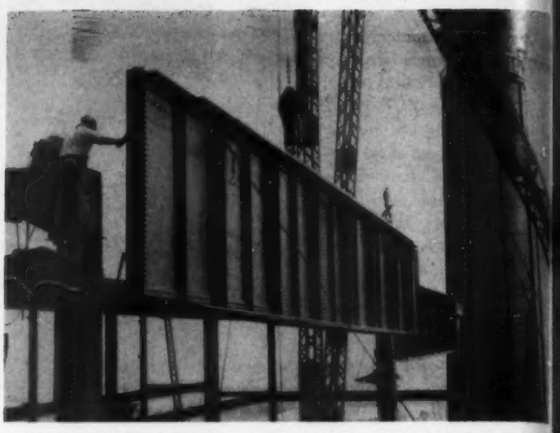
INSLEY MANUFACTURING CORPORATION
General Offices • Indianapolis 6, Indiana

(Continued from preceding page)

on. This will result in the street being closed a shorter length of time than if we tried to do all of the work necessary next spring."

Although this was their first city street job, McCree & Co. have had some 40 years' experience in heavy construction. The company does about $2 million worth of work each year for highways and airports. Both the company's president, Donald G. McCree, and secretary, Guy Chase, are giving their cooperation and assistance to the new public relations program.

Their superintendent, Jim Fuller, is a seasoned veteran of the construction business. He studied civil engineering at South Dakota State College, and has a good formal background for supervising heavy construction. His first practical experience was gained in the construction branch of the Marine Corps. During his four years of service in the Pacific during World War II, he advanced from private to first lieutenant. After the war, he started to work with McCree & Co., and he's been with the firm for the past 13 years. Jim Fuller is a good hand at taking care of anything from job troubles to a broken-down engine—to public relations. THE END



Two derricks lift a 65-foot-long girder, which will help support a giant boiler drum for Unit No. 8, Crawford Station of the Commonwealth Edison Co., Chicago. Special connections kept the girder level at all times.

In 40 States, Contractors Have Installed Armco Corrugated Metal Drainage Structures Under 138 New Limited-Access Highways

New steels are born at Armco

Armco Corrugated Metal Drainage Structures meet all requirements of modern superhighways, just as they have been doing for highways and roads all over the country for the past 50 years. Armco Drainage Structures are economical and easy to install, too.

For information on these highway drainage products, just write Armco Drainage & Metal Products, Inc., 4310 Curtis Street, Middletown, Ohio.

ALABAMA
Interstate 20 (Birmingham to Pell City)
Interstate 59 (Fort Payne to Georgia State Line)
Interstate 65 (Atmore to Evergreen)
ARKANSAS
Interstate 40
Interstate 55
CALIFORNIA
Golden State Freeway (Los Angeles to Bakersfield)
Interstate 5 (San Francisco to Reno)
Interstate 15 (Los Angeles to Las Vegas)
Interstate 80 (San Francisco to Reno)
Nimitz Freeway (Oakland to San Jose)
San Bernardino Freeway (Los Angeles to San Bernardino)
San Diego Freeway (Los Angeles to San Diego)
U. S. 50 (Oakland to Carson City)
U. S. 101 (Los Angeles to San Francisco)
COLORADO
Denver-Boulder Turnpike
Interstate 25 (Pueblo to Denver; Denver North; Trinidad)
Interstate 70 (Idaho Springs)
Interstate 80S (Fort Morgan-Brush; Denver to Barr Lake)
Valley Highway (Denver)
CONNECTICUT
Connecticut Turnpike (Interstate 95)
Interstate 84 (New York-Conn. Line in Danbury. East to Hartford)
Interstate 91 (Hartford to Mass. Line at Longmeadow)
FLORIDA
Sunshine State Parkway
GEORGIA
Interstate 75 (Adel to Ashburn)
Interstate 85 (Fulton County)
U. S. 41 (Atlanta to Cartersville; Atlanta to Griffin)
IDAHO
Interstate 15 (Monida to Humphrey; Hamer to Roberts; Blackfoot to Pocatello)
Interstate 80N (American Falls to Pocatello; Mountain Home to Boise; Payette to Caldwell)
ILLINOIS
Congress Expressway (Interstate 90)
Edens Expressway (Interstate 94)
Illinois Toll Road
Interstate 55
Interstate 57
Interstate 80
Interstate 255 & 270
Northwest Expressway & Calumet Skyway (Interstate 94)
Tri-State Toll Road (Interstate 294)
INDIANA
Indiana Toll Road (Interstate 80 and 90)
Interstate 65
Interstate 70
Interstate 74
Interstate 465
Tri-State Highway (Interstate 94)
IOWA
Interstate 29
Interstate 35
Interstate 80 (Davenport to Council Bluffs)
KANSAS
Kansas Turnpike (Interstate 35; Interstate 70 Kansas City to Topeka)
Muncie Expressway (Interstate 70, Kansas City)
U. S. 50 (Turkey Creek)
KENTUCKY
Interstate 75 (Covington)
MAINE
Interstate 95 (Portland to Brunswick)
MASSACHUSETTS
Interstate 91 (Conn.-Mass. Line North through Longmeadow-Springfield to Vermont Line)
Interstate 93 (Boston to N. H. Line via Woburn-Andover-Methuen)
Massachusetts Turnpike (Interstate 90)
MICHIGAN
Interstate 75
Interstate 94
Interstate 96
MINNESOTA
Interstate 35 (Mission Creek to Sandstone)
Interstate 35W (Owatonna, north)
Interstate 90 (Austin to Dexter; So. Dakota Line to Beaver Creek)
Interstate 94 (Moorhead, north)
Minneapolis Freeway (Interstate 35W & 694)
St. Paul Freeway (Interstate 35E & 494)
MISSOURI
Interstate 3 (Kansas City, north)
Interstate 35
MONTANA
Interstate 15 (Cascade to Ulm)
Interstate 90 (Tarkio; Drummond; Springdale; Glendive East)
Interstate 94 (Crow Agency to Hardin)
NEBRASKA
Interstate 80 (Omaha to Lincoln)
NEVADA
Interstate 15 (Los Angeles to Las Vegas)
Interstate 80 (Sacramento to Reno)
U. S. 50
NEW HAMPSHIRE
Interstate 89 (Bow-Concord to Lebanon)
Interstate 93 (Franconia-Littleton)
NEW JERSEY
Garden State Parkway (Cape May to Spring Valley)
New Jersey Turnpike (Ridgefield Park to Deepwater)
NEW MEXICO
Interstate 10 (Lordsburg to West Arizona Line)
Interstate 25 (Las Cruces to Radium Springs; Socorro to Belen; Las Vegas, north; Glorieta, north and south)
Interstate 40 (Gallup, west; Ft. Wingate to Thoreau; Grants to San Fidel; Laguna to Correo; Albuquerque, etc.; Moriarity to Clines Corner; Guadalupe County Line to Santa Rosa)
NEW YORK
Cross Westchester Expressway (Interstate 487)
Empire Stateway (Interstate 81, Binghamton to Ogdensburg)
Heckscher State Parkway
Long Island Expressway (Interstate 78, Queens only)
New York State Northway (Interstate 87, Albany to Plattsburgh)
New York State Thruway and Extensions (Interstate 90, Pa. to Mass.; Interstate 87, Selkirk to New York City)
Palisades Interstate Parkway
Sunrise Highway (State Route 25)
Taconic State Parkway (New York City to Albany)
Throggs Neck Bridge(Interstate 78)
NORTH CAROLINA
Interstate 95 (Fayetteville to Dunn)
U. S. 1 (Sanford to Raleigh)
U. S. 29 (Greenville to Gastonia)
U. S. 70 (Salisbury to Raleigh)
NORTH DAKOTA
Interstate 29
Interstate 94
OHIO
Interstate 70 (Springfield to Englewood)
Interstate 71
Interstate 75 (Dayton to Piqua; Wapak to Findlay)
Interstate 90
OKLAHOMA
Interstate 35
Interstate 40
Interstate 44
U. S. 69
OREGON
Interstate 30 (Banfield Expressway; Columbia River Highway)
Interstate 99 (Baldock Freeway)
Sunset Highway (Portland, west)
PENNSYLVANIA
Interstate 70S (Washington to Pennsylvania Turnpike)
Interstate 83 (New Cumberland to Maryland line)
Pennsylvania Turnpike (Interstate 80S to Valley Forge)
Schuylkill Expressway (Interstate 80S)
SOUTH CAROLINA
U. S. 29 (Greenville to Gastonia)
SOUTH DAKOTA
Interstate 90 (Black Hawk to Rapid City)
Interstate 93 (Sioux Falls to Iowa State Line)
Interstate 95 (Sioux Falls Bypass)
TEXAS
Interstate 10
Interstate 20
Interstate 35
Interstate 45
UTAH
Interstate 15 (Beaver to Paragonah; Harrisburg Bench; St. George, north; Levan to Scipio)
Interstate 70 (Cat Canyon to Emery Gy Line)
Interstate 80 (W. Tremonton to Bl. Creek; Henefer to Echo, Parley's Canyon)
U. S. 40 (Heber to Silver Creek Junction)
U. S. 89 (Mt. Pleasant to Manti; Hatch, south; Kanab to Glen Canyon)
U. S. 160 (Moab, north)
VERMONT
Interstate 91 (Mass. Vt. Line North through Guilford-Brattleboro-Dummerston-Putney)
Interstate (White River Jt. to Montpelier-Burlington-St. Albans)
WASHINGTON
Interstate 10 (Renton and Shore Cutoff; Seattle-Spokane-Coeur d'Alene)
Interstate 99 (Olympia Bypass; Vancouver to Olympia; Tacoma-Everett Freeway; Vancouver Bypass; Auburn-Echo Lake Bypass)
WEST VIRGINIA
Interstate 64
Interstate 77
WISCONSIN
Janesville Bypass
Interstate 90
Interstate 94
Interstate 894 (Bypass around Milwaukee)
Milwaukee County Expressway
WYOMING
Interstate 25 (Cheyenne to Casper)
Interstate 80 (Rawlings to Evanston)
Interstate 90 (Buffalo to Newcastle)

ARMCO DRAINAGE & METAL PRODUCTS

Subsidiary of ARMCO STEEL CORPORATION

OTHER SUBSIDIARIES AND DIVISIONS: Armco Division • Sheffield Division • The National Supply Company • The Armco International Corporation • Union Wire Rope Corporation

For more facts, use coupon or Request Card at page 18 and circle No. 328

Derricks double up to lift big girders through roof of building

■ Two 65-foot-long, 10-foot-deep roof girders to support a giant boiler drum for the Commonwealth Edison Co. in Chicago required a special handling technique by Bethlehem Steel Co. erection crews. The boiler drum is for Unit No. 8, Crawford Station.

Two massive girders—one weighing 42 tons and the other 46 tons—could not be picked up from a flatcar at the side of the structure and raised 183 feet to the roof. Instead, the girders were delivered into the center of the building on rail cars and spotted in the boiler-well areas. All gallery framing in the boiler wells had been purposely omitted so that the girders could be raised through the building to the roof.

Two guy derricks, each equipped with a 100-foot boom and a 110-foot mast, erected the girders horizontally. Two special connections replaced slings and lashings. Six rivets on the top flange of each girder were left out so that the special connections could be bolted in place. One derrick has a capacity of 45 tons, and the other about 20 tons. The connections on the girders were so positioned that the larger derrick would be lifting a proportionately larger share of the load, yet the girder would rise absolutely level.

A shackle pin was slipped into each special hitch and directly connected to the load falls of each derrick. When the hoist operator of each derrick took up on the load falls, the heavy girder rose smoothly, evenly, and level. Once each girder was in place atop the roof, the special connections were removed and high-strength bolts were inserted through the open rivet holes.

After the roof girders were up, Bethlehem ironworkers erected the gallery framing steel in the boiler wells. About 3,480 tons of steel went into the structure.

A total of 4,022 federal-aid highway construction contracts, costing $1.4 billion, was awarded in the first 6 months of 1959.

PRODUCT PARADE

For further information on any of the products described in the following section, circle the designated number on the Request Card at page 18.

Powerful new hydraulic motor scraper has capacity of 30 yards heaped

The Allis-Chalmers Mfg. Co. announces the new Model TS-360 all-hydraulic motor scraper with a 30-cubic-yard heaped capacity and a 22.3-cubic-yard struck capacity. This 63,150-pound unit is powered by the Allis-Chalmers turbocharged Model 21000 engine, developing 340 horsepower at 2,000 rpm.

Double-acting hydraulic bowl-lift jacks assure plenty of force at the cutting edge for penetration into tough-loading materials. Hydraulic power is furnished by a tandem pump, gear-driven from the rear of the engine crankshaft.

The TS-360's double-acting steering jacks and multiplier links provide the unit with exceptional maneuverability. A 90-degree turn either way can be accomplished with only a one-sixth turn of the steering wheel. Full 180-degree turns can be made within a width of 35 feet 8 inches.

A 5-speed transmission provides speeds up to 26.3 mph.

Twin, telescoping, hydraulic cylinders provide power for the positive forced ejection. Rams push from the center of the ejector for more effective use of this power. As the ejector moves forward, the apron rises to a 10-foot opening, assuring ejection of all types of material.

For further information write to the Allis-Chalmers Mfg. Co., Dept. C&E, P. O. Box 512, Milwaukee, Wis., or use the Request Card at page 18. Circle No. 80.

Announce off-highway truck series with gasoline, diesel, or LPG engines

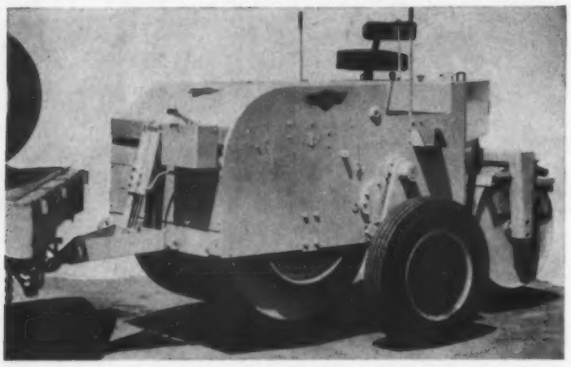
A new series of International off-highway heavy-duty trucks with choice of gasoline, LPG, or diesel-powered engines has been introduced by the Motor Truck Division of the International Harvester Co.

Called the 230 Series, it includes six basic models in both four-wheel and six-wheel design.

The gvw of the standard 230 four-wheel model is 46,000 pounds. The standard F-230 six-wheeler is rated at 59,000 pounds gvw. With optional 18,000-pound front axle and 55,000-pound rear axle, the six-wheel model offers a gvw rating of 73,000 pounds.

Engines available for both four-wheel or six-wheel models are the 6-cylinder Red Diamond 501, rated at 212 horsepower; the Model V-549 V-8, rated at 257 horsepower; and Cummins NH, HR, and NT series diesels. Both 6-cylinder and V-8 power plants are offered with factory-installed LPG fuel systems.

For further information write to the International Harvester Co., Dept. C&E, 180 N. Michigan Ave., Chicago, Ill., or use the Request Card at page 18. Circle No. 14.



A new machine weighing from 4½ to 6½ tons increases the number of Essick tandem rollers to 15 models. The Model 650-C has dual controls.

New roller features self-trailing wheels

Hydraulic operation of self-trailing wheels for maximum portability is featured on the new Essick Model 650-C 4½ to 6½-ton two-wheel tandem roller.

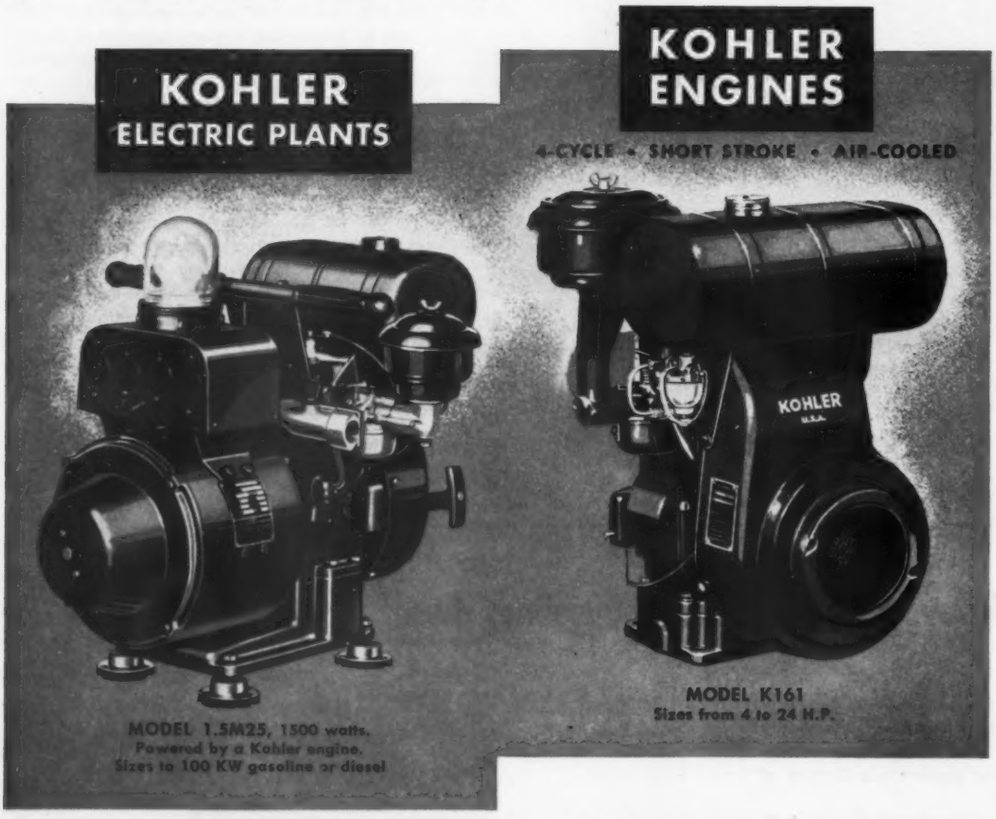
During rolling operations, the travel wheels are retracted upward to a high position; for the few instances where close wall clearances are necessary, the travel wheels can be quickly and easily removed.

Fingertip manipulation of two individual valves controls the power to operate the trailing mechanism. The valves are located at the front of the roller where all movement can be seen by the operator. One valve controls adjustment of the height of the towing hitch, while the other valve swings the wheels under the roller and smoothly raises it to towing position.

The Model 650-C has dual controls accessible from either of the two operating positions, with hydraulic steering lever located between seat positions. It is powered by a Continental 4-cylinder 32-hp water-cooled engine.

For further information write the Essick Mfg. Co., Dept. C&E, 10[illegible] Santa Fe Ave., Los Angeles 21, Cal. or use the Request Card that is bound in at page 18 of this issue. Circle No. 34.

POWER with a reputation for rugged reliability



Since 1920, Kohler electric plants, powered by Kohler engines, have provided a host of users with reliable, efficient electric power for sole supply, automatic stand-by and marine needs.

Also powered by Kohler engines are many kinds of equipment, produced by numerous leading companies, for use in construction, agriculture and industry.

With long experience in the production of internal combustion engines and electrical generating sets, Kohler Co. emphasizes ruggedness, conservative rating, ease of maintenance, ease of starting. Sales and service nation-wide. Write for illustrated printed matter.

KOHLER CO. Established 1873 KOHLER, WIS.

KOHLER OF KOHLER

Enameled Iron and Vitreous China Plumbing Fixtures • Brass Fittings • Electric Plants • Air-cooled Engines • Precision Controls

For more facts, use Request Card at page 18 and circle No. 330

Surveying instruments have Japanese lenses

Path surveying instruments, a [illegible] line of surveying transits and levels are now available in the United States and its possessions from the Charles Bruning Co., Inc.

The Path line includes 4 and 6-[illegible]

transits, transit levels, dumpy levels, eye levels, tilting levels, and pocket levels.

Japanese lenses, said to provide maximum definition of viewed objects, powerful magnification of images, and unwavering accuracy of targets, are used in all instruments.

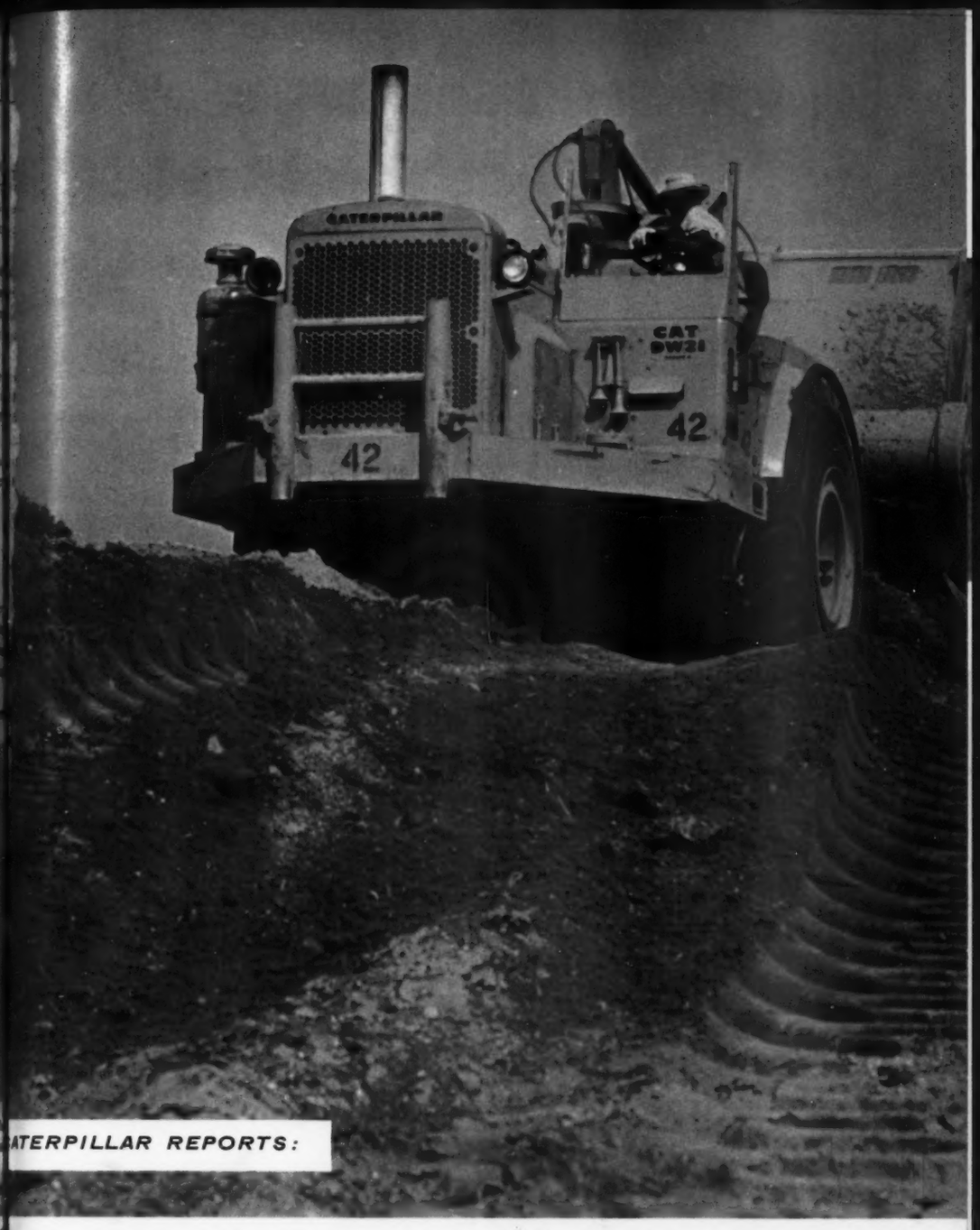
For further information write the Charles Bruning Co., Inc., Dept. C&E, 1800 W. Central Road, Mount Prospect, Ill., or use the Request Card at page 18. Circle No. 118.

Single-stick control for crawler tractors

A new master control that takes the job of driving crawler tractors into the simple matter of pushing a single control stick forward, backward, or to the side has been developed by Deere & Co.

The single-stick control activates hydraulics to perform the various steps of clutching, braking, steering and shifting for forward and reverse travel. Called Pilot-Touch, it is offered as optional equipment on John Deere 440 industrial crawlers.

For further information write the John Deere Industrial Division, Deere & Co., Dept. C&E, 3300 River Drive, Moline, Ill., or use the Request Card at page 18. Circle No. 12.



ATERPILLAR REPORTS:

THE BIG STORY BEHIND THE BIGGEST EARTHMOVING JOB IN MICHIGAN...

Holloway Construction Company depends o
6,000,000 cu. yd. in 16 months on 2

Michigan contractor's giant highway spread is 95% Caterpillar!

From Albion to Battle Creek, 6,000,000 cu. yd. of sand, clay and muck are being moved to speed traffic over the rugged hills of south central Michigan. In the largest earthmoving job ever handled by a single contractor in the state, curving U. S. 12 is being converted into 21 miles of Interstate 94.

Midway between these two cities you can stand with your feet planted deep in the soft, brown clay and look in either direction, as far as the eye can see, at the army of yellow Caterpillar machines carving out the path of this new roadway.

The Holloway Construction Co. of Livonia, Michigan, won the $8,500,000 contract by being low bidder on three continuous segments of the project. Work started on April 1, 1959, and is due for completion by August 3, 1960. As of the latest report, according to Bud Morrell, Job Supt., production was running 10 months ahead of schedule.

To keep pace with the demanding schedule, men and equipment are working a steady 11 hours every day. And the Holloway spread—twice as large as any other assembled by one contractor in the state—depends heavily on Caterpillar quality to maintain this high-production capacity.

Part of the Holloway Construction Company's massive equipment spread that is now working on Michigan's biggest earthmoving job. 95% of the machines are Caterpillar-built, assuring the dependability needed to keep the job on schedule. When work is completed, Interstate No. 94 will be one of the key routes between Detroit and Chicago.

on Caterpillar machines in moving 21-mile Interstate Highway project

There are 66 Caterpillar-built machines operating on the job including:

40 DW21 Tractor-Scrapers

8 D9 Tractors	**2 D4 Tractors**
8 D8 Tractors	**4 No. 12 Motor Graders**
2 D6 Tractors	**2 No. 14 Motor Graders**

For successful contractors throughout the country like Dan Holloway, there is only one reason for using Caterpillar equipment: "I think Caterpillar is the best equipment made in terms of high production and low cost of operation."

This, indeed, is the big story behind Michigan's biggest earthmoving job.

Gamma Rays speed soil compaction tests. This new device, developed by the Michigan Highway Department, determines compaction as well as moisture content. In two minutes it can perform work which takes a half hour by conventional methods.

High-speed loading of DW21s with Cat D8 and D9 pushers is clearly visible in a borrow pit several miles north of Marshall, Michigan, one of the towns to be bypassed by the new highway.

WHAT THE MEN WHO KNOW MACHINES HAVE TO SAY ABOUT CATERPILLAR-BUILT EQUIPMENT:

Francis "Bud" Morrell, Job Supt., Holloway Construction Co. "You can count on Caterpillar. When you take a big job, you must be sure that your equipment is going to stay on that job. We take care of our machines, work them like hell, and know that these Caterpillar machines take good care of us."

George Neely, Equipment Supt., Holloway Construction Co. "We like Caterpillar machines because they are better than any other make. We've tried them all at one time or another, but these other manufacturers have a long way to go before we change our minds on which equipment is the best."

Dan Holloway, Owner, Holloway Construction Co. "Caterpillar machines make more money for us. They stand up under 12-month-per-year punishment. Last December we moved one million yards of dirt in 28 days. We had to keep after it day after day to prevent it from freezing."

Russ Hill, Master Mechanic, Holloway Construction Co. "When a machine goes down, you have to move fast to get it back on the job. We want the right part fast. Michigan Tractor (Caterpillar Dealer) takes good care of us. When a part is guaranteed, you know they'll back it up."

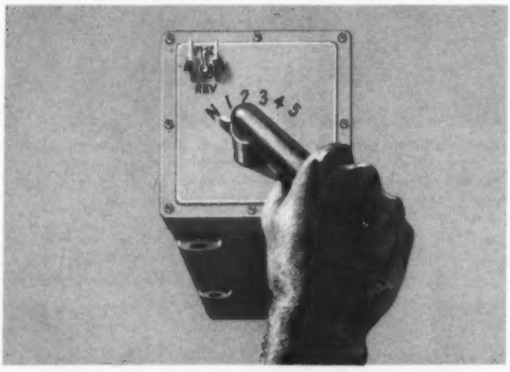
NEW PRODUCTS FROM CATERPILLAR SET NEW PRODUCTION STANDARD

Here's a review of 3 important product developments born of Caterpillar research . . . proved in the field . . . available to you now for higher production

New 225 HP Cat No. 619 Tractor and 14 cu. yd. No. 442 Scraper

First two-wheel tractor to deliver four-wheel spe and dependability . . . matched with new No. 4 Series B LOWBOWL Scraper for new high productio

The new No. 619 with Turbocharged Cat Engine pr vides 225 HP and high torque rise, ideal for luggi under load and fast acceleration. Its LOWBOWL Scrap handles 14 cu. yd. struck, 18 cu. yd. heaped. It has 30.2 MPH operating speed, plus ground-hugging roa bility never before found in a two-wheel tractor comparable size. It is a versatile "all job" rig.



SynchroTouch Transmission Control for DW20 and DW21 Tractors

An advanced new way to shift gears easier a faster. Operator simply dials desired gear for au matic, split-second, touch-and-go respons

In less than a second, it is engaged. Standard foot clu is retained but is used only starting from standstill.

Optional for DW20 and DW21 Tractors, th Caterpillar SynchroTouch Transmission Control gives y these important benefits: 1. Faster shifting—for fas cycles and more payloads per hour. 2. Significant redu tion in operator fatigue. 3. Economical direct dri transmission—uses standard DW20 and DW21 tra mission and clutch components. 4. No special maintenan

Power Shift Transmission for D8 and D9 Tractors

On-the-go shifts under full load in a split secon Changes speed, reverses direction with finger-t control lever—and no clutching! This new transmi sion, with exclusive new design, provides productio highs never before possible with a track-type tract

Power shift control is mounted to operator's le Selector lever (black knob) eliminates gearshift, forwa reverse and flywheel clutch levers. Safety lever (re knob) prevents accidental engagement. Selector lev moves in a "U" path to various positions.

See your Caterpillar Dealer for the complete fac Ask him to demonstrate these new product developme on your job.

Caterpillar Tractor Co., General Offices, Peor Illinois, U.S.A.

CATERPILLA

Caterpillar, Cat and Traxcavator are Registered Trademarks of Caterpillar Trac

DIESEL ENGINES • TRACTORS • MOTOR GRADE EARTHMOVING EQUIPMENT

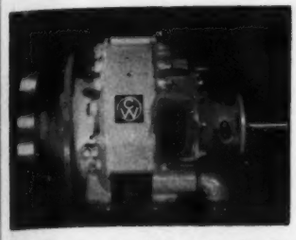
GREAT NEW PRODUCTS IN THE CATERPILLAR TRADITION

Internal-combustion engine has but two moving parts

The Curtiss-Wright Corp. announces a radically new internal-combustion engine that has been developed jointly with NSU Werke, of West Germany.

The engine, described as a rotating combustion engine with only two moving parts, has a range of from 100 to 700 horsepower. A unit in the 750 to 5,000-hp class also is under development.

Compact and lightweight, the engine requires no valves, springs, camshafts, pistons, or connecting rods.



Working on a trochoid principle, the rotor inside the engine chamber and the crankshaft are the only two moving parts.

An automotive carburetor supplies a mixture of gasoline and air into the engine chamber through a side wall port. As the engine's rotor turns, the mixture is compressed and fired by a single sparkplug. The exploding gases deliver the power to the crankshaft through the rotor. Exhaust fumes escape through another port in the chamber wall.

The engine does not require premium fuels, and it operates at high efficiency on automobile gasoline, according to the manufacturer.

The engine is expected to find a wide application in the industrial-equipment field covering compressors, generators, pumps, and earthmoving equipment.

For further information write to the Curtiss-Wright Corp., South Bend Division, Dept. C&E, 701 W. Chippewa Ave., South Bend, Ind., or use the Request Card that is bound in at page 18. Circle No. 79.

Six new epoxy resins for construction use

Development of six new types of epoxy resins for use in building, construction, and maintenance is announced by the Sika Chemical Corp. of Passaic, N. J.

The epoxy compounds include a joint sealant, crack sealant, bonding compound, patching compound, skid-resistant surfacing for highways, and corrosion-resistant surfacing for concrete. According to the manufacturer, the materials exhibit high bond to structural materials, stability over a wide range of temperatures, resistance to corrosion, compatibility to all concrete and masonry, and rapid curing.

For further information write to the Sika Chemical Corp., Dept. C&E, 35 Gregory Ave., Passaic, N. J., or use the Request Card at page 18. Circle No. 80.

A hydraulic leveling system that allows correction up to 15 degrees in either direction while digging permits this improved Earthripper to keep one wheel at street level and the other on the curb while it digs a plumb ditch. The hydraulic crumbing shoe is also visible, as is the "left-traversed" position of the reversible conveyor, which offers infinite variability in speed, and has self-cleaning rollers. This model can dig 8½ feet deep without alteration; with minor adjustments, it can dig up to 24 inches wide. For highway travel, the entire boom swings to horizontal along the truck's chassis; it is then 10 feet 6 inches high, 20 feet 6 inches long, and weighs 17,000 pounds, including the truck. For further information write to the **P-M Machine Co.**, Dept. C&E, P. O. Box 3277, Bryan, Texas, or use the Request Card at page 18. Circle No. 44.

Completely portable Lima A-W crushing installation has primary 20 by 36-in. jaw crusher, Model 101-CE secondary plant and 7-yd. surge bin. Delivers exceptionally high production for Maymead Lime Co. in Tennessee.

How Lima Austin-Westerns BEAT RISING COSTS!

Higher output, lower maintenance. These two cost reducers are characteristic of Lima Austin-Western Crushing, Screening and Washing equipment.

Advanced engineering design assures top operating efficiency for years—free of maintenance problems and costly downtime. Improved manufacturing processes and extensive use of anti-friction bearings and heat-treated alloy steels also add to the dependability of this rugged, precision-built machinery.

Lima A-W offers a complete crushing, screening and washing line including jaw and roll crushers, matching screens, conveyors and bins. Stop increasing costs; learn how Lima Austin-Western meets your exact needs for low-cost, accurately sized specification materials. See your nearby distributor or write to Baldwin-Lima-Hamilton Corporation, Construction Equipment Division, Lima, Ohio.

Lima Austin-Westerns available for stationary or portable installation.

DISTRIBUTORS IN PRINCIPAL CITIES OF THE WORLD

LIMA AUSTIN-WESTERN Crushing, Screening and Washing Equipment

BALDWIN · LIMA · HAMILTON

CONSTRUCTION EQUIPMENT DIVISION • LIMA, OHIO

607

For more facts, use Request Card at page 18 and circle No. 330

This diesel-electric "tree smasher" pushes trees to the ground, then crushes them into splinters with its heavy blade-studded steel roller. The 400-hp machine is 37 feet long, 12 feet high, and has two rollers that are 12 feet wide and 5 feet in diameter. It weighs a little over 47 tons and, because it is electrically powered and controlled, its operator needs only to manipulate simple electric switches. For further information write to **R. G. LeTourneau, Inc.**, Dept. C&E, 2399 S. MacArthur, Longview, Texas, or use the Request Card at page 18. Circle No. 11.

Adjusting leg extensions for scaffolding frames

The Waco Mfg. Co. announces a new scaffolding frame leg extension.

The No. 520 adjustable leg extension, states the manufacturer, adds shore staff versatility to scaffold frames and can be used as a leg extension in regular scaffold applications.

The unit will lock onto either the top or bottom of any 1⅝-inch-diameter frame leg to provide up to 3 feet of extension. When used on the bottom of a frame leg, the unit must be inverted. Additional versatility can be obtained through the use of standard adjustment screws, shore heads and base plates.

The extension is adjustable in 4-inch increments. Load capacity is equal to frame capacity (per leg) up to 5,000 pounds.

For further information write to the Waco Mfg. Co., Dept. C&E, 5261 W. 130th St., Cleveland 30, Ohio, or use the Request Card at page 18. Circle No. 24.

Adaptable new crane is heavy-duty machine

Little Giant Crane & Shovel, Inc., announces the 17½-ton Model 48 crane. Available as a crawler, self-propelled, or carrier-mounted machine, the unit is powered by a Continental Model M-363 engine, and features mechanical clutches and a direct power train.

Torque converters are available, gasoline or diesel-powered.

A collapsible high gantry is used, and the counterweight is easily removable. Interchangeable main-boom sections are designed to handle all types of loads from the standard 38-foot boom length up to 85 feet with 15-foot jib.

A variety of front-end attachments are available.

For further information write to Little Giant Crane & Shovel, Inc., Dept. C&E, E. 16th and Howard Drive, Des Moines 13, Iowa, or use the Request Card at page 18. Circle No. 45.

Shown here carrier-mounted, the Model 48 is also available self-propelled or for crawler mounting.

RED SEAL RUGGEDNESS

AND

RIGHTNESS OF DESIGN

are helping to build product acceptance for leading builders of

SPECIALIZED EQUIPMENT

Ingersoll-Rand compressor operating paving breaker. Power: Continental.

In design, in materials, and in lasting performance, Continental Red Seal engines give you the benefit of 57 years' aggressive engineering. Traditional Red Seal ruggedness finds its natural reflection in rock-bottom upkeep costs. You find Continental-powered equipment on the job—wherever there's a job to be done—in excavating, ditching, concrete ripping, railway building and maintenance, and all phases of road construction. Every Continental Red Seal is not only built for the job, but backed by parts and service facilities the world over.

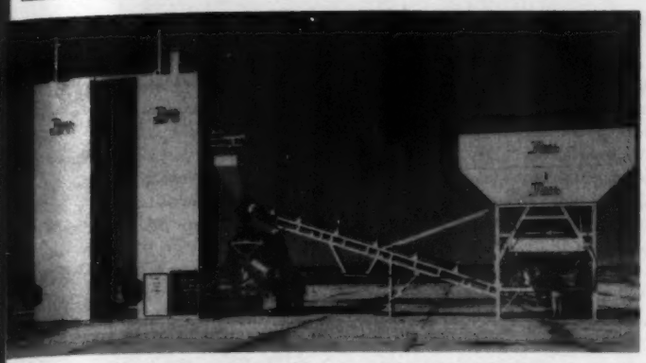
CONTINENTAL MOTORS · Power Jobs for the Nations · AMERICA'S STANDARD

Continental Motors Corporation

MUSKEGON • MICHIGAN

6 EAST 45TH ST., NEW YORK 17, NEW YORK • 3917 S. SANTA FE AVE., LOS ANGELES 58, CALIF.
6218 CEDAR SPRINGS ROAD, DALLAS 35, TEXAS • 1252 OAKLEIGH DR., EAST POINT (ATLANTA) GA.
ST. THOMAS, ONTARIO

For more facts, use Request Card at page 18 and circle No. 331



This entire concrete batching setup can be in operation within eight hours.

Portable batching plant is high-capacity unit

A high-capacity portable concrete batching plant is announced by the Ross Porta-Plant Co.

Designated Model 60-3, the plant features an overhead self-contained aggregate plant with 3 or 4 compartments and 60 tons of overhead storage. Standard equipment includes a 1½-inch automatic water meter, folding sides for legal highway travel, 15,000-pound dial scales, and complete air-operational system on all gates.

Basically operated through air-manual operation, the plant can be furnished in various stages of automation.

The second element of the batching setup, the highly portable Model 350-B bucket-elevator cement plant, can be augmented by the addition of one or two auxiliary silos. The additional units, connected in sequence, boost the cement storage from 350 to 1,100 barrels.

These cement plants are basically air-manual operated, but can be furnished with semi or fully automatic controls and a remote station at the aggregate plant for one-man operation.

The entire setup can easily be in operation within eight hours, and can be disassembled and moved in less time, according to the manufacturer.

For further information write to Ross Porta-Plant, Dept. C&E, Box 446, Brownwood, Texas, or use the card at page 18. Circle No. 20.

Tips aid in pile driving; for all types of piles

New-type pile tips for driving all kinds of piles in construction are announced by Foundation Specialties.

According to the manufacturer, these tips will prevent "hung-up" piles, collapse, distortion, bending, dog-legging, and clogging. They are available for use on closed-end, open-end piles, and H-beam bearing piles.

For further information write to Foundation Specialties, Inc., Dept. C&E, 295 Madison Ave., New York 17, N. Y., or use the Request Card at page 18. Circle No. 119.

get the facts on
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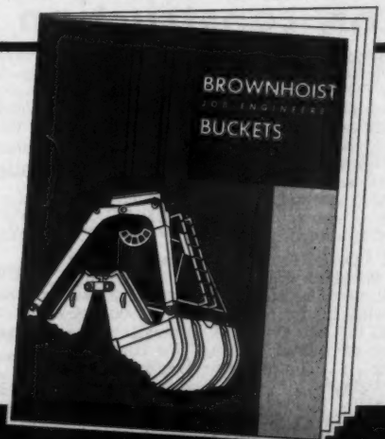


write to:

212

INDUSTRIAL BROWNHOIST CORPORATION
BAY CITY • MICHIGAN

For more facts, use Request Card at page 18 and circle No. 332

Infrared space heaters are high-output units

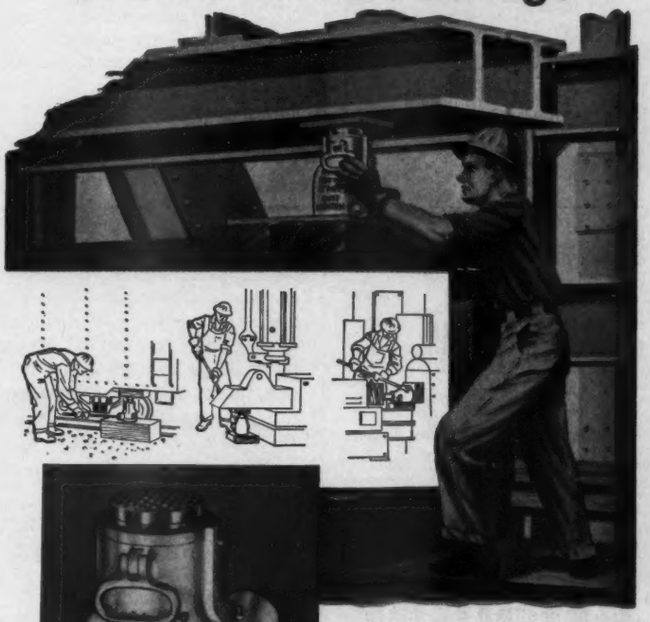
Gas-fired infrared space heaters that range in output from 12,000 to 48,000 Btu's per hour are available from Perfection Industries, a division of the Hupp Corp.

These thermostat-controlled heaters are said to be particularly useful for heating high-ceilinged buildings —without ducts, blowers, or heat exchangers.

For general heating use parabolic reflector units can be mounted at heights up to 45 feet since the reflector concentrates and directs the rays. Straight side reflectors, recommended on units mounted at heights from 10 to 20 feet, provide a spread pattern of radiation.

For further information write to Perfection Industries, division of Hupp Corp., Dept. C&E, 1135 Ivanhoe Road, Cleveland 10, Ohio, or use the Request Card at page 18. Circle No. 7.

200,000 Pounds Of Lifting Power In a 98 Pound Package



The 100 ton capacity Duff-Norton Aluminum Screw Jack weighs only 98 pounds. It is easier to handle and spot than any other type of jack of the same capacity which may weigh two to five times more.

Maintenance is virtually eliminated by the rugged construction—aluminum alloy housing and base—heat-treated steel lifting screw—sealed-in lifetime lubrication. This enables these jacks to withstand hard usage in any weather without damage.

The design of these jacks makes it impossible for them to creep—will support load indefinitely. They can be used in any position —have no fluid to leak—no air to lock. Duff-Norton Screw Jacks are ideal for heavy riggers or for construction and maintenance crews in shipyards, steel mills and other industries.

Duff-Norton Screw Jacks are available in 25, 35, 50 and 100 ton capacities in aluminum—in 15, 25, 35 and 50 ton capacities in malleable iron. For full details on these durable, all-purpose lifting jacks ask your distributor or write for Bulletin AD-12s.

DUFF-NORTON COMPANY
P. O. Box 1889 • Pittsburgh 30, Pennsylvania
COFFING HOIST DIVISION • Danville, Illinois

DUFF-NORTON JACKS
Ratchet • Screw
Hydraulic • Worm Gear

COFFING HOISTS
Ratchet Lever • Air
Hand Chain • Electric

For more facts, use Request Card at page 18 and circle No. 333

The Bolling dual-wheel front-steering axle with independently rotating dual wheel fits standard truck designs.

New axle features dual front wheels

A new dual-wheel front-steering axle assembly is announced by the Bolling Wheel & Axle Division of the Anderson-Bolling Mfg. Co.

This assembly gives independent rotation of each of the four tires as well as braking on all tires from conventional-type braking equipment. The axle is offered in two capacities —18,000 pounds for maximum payload, flotation, and safety on over-the-road equipment, and 30,000 pounds capacity for heavy front-end loadings on off-the-road equipment.

The 18,000-pound axle is designed to fit standard trucks and adhere to all highway restrictions. Versatility of axle lengths allow for turn angles between 28 and 36 degr

The 30,000-pound capacity is fered as a replacement for pre tandem-axle designs, or can mounted in tandem-axle fashion offer 60,000 pounds front-end loadi

The major advantage of dual fr wheels is the extra payload that be carried by taking advantage the full allowable weight on the fr axle, the manufacturer points out.

For further information write the Anderson-Bolling Mfg. Co., Bo ing Wheel & Axle Division, Dept. C Grand Haven, Mich., or use the R quest Card at page 18. Circle No.

Moisture-content control for aggregate batcher

The Moisture Matic compensator system, designed to indicate, record, and compensate for variations in moisture content of both fine and coarse aggregates by making up a liquid counterweight which goes onto the scale while the aggregates are being weighed, is available from the Concrete Controls Corp. Variations in moisture content are converted to a parallel variation in air output, which in turn maintains a flow of water that is directly proportional to the moisture in the flowing aggregates.

Water and aggregate scales are set for surface dry weights. The Moisture Matic automatically controls rate of flow of the liquid counterweight.

For further information write to the Concrete Controls Corp., Dept. C&E, 1012 E. Geneva Road, Wheaton, Ill., or use the Request Card at page 18. Circle No. 32.

. . . and for

NEARBY SERVICE on Black & Decker tools. Black & Decker maintains 50 factory service branches plus authorized service stations to give your B&D tools the attention mechanical products need periodically. Keep your B&D tools in top condition, on the job all the time.

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FREE TOOL INSPECTION no cost, no obligation.

STANDARD B&D GUARANTEE after completion of all recommended repair work.

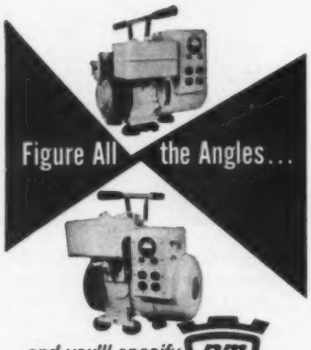
You'll find the location of the nearest B&D repair facility in the Yellow Pages under "Tools-Electric," or write for address to: The Black & Decker Mfg. Co., Dept. 1301-S, Towson 4, Md.

50th YEAR

Black & Decker

Quality Tool Service

For more facts, circle No. 334



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For more facts, circle No. 335

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Speed up loading, unloading and positioning of bulky, hard-to-handle materials with a hydraulic POWER LOADER crane for trucks. Move and place pipe, conduit, valves, concrete block and brick, cut stone and marble, precast concrete, paving forms and fabricated steel sections, or any building materials, easily and safely—anywhere a truck can go. No other method can give you the overall flexibility of operation as a POWER LOADER, at such a low investment.

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(truck-mounted crane)

POWER GATE®
(hydraulic tail gate)

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DAYBROOK HYDRAULIC DIVISION
BOWLING GREEN • OHIO

Folding boom for crane offers 40-foot reach

A new 40-foot boom that folds up to 8 feet for easy road transport is available for the Teale Versa-Lift Model 400-R crane.

The boom is made up of five sections. The first four sections are hinged to one another for quick, easy jackknife folding. The fifth, or tip section, is a removable sheave that can be telescoped back into the fourth section or inserted into the open ends of any of the preceeding sections for load handling at that boom length. As a result, the boom can be converted to 8, 17, 26, 35, or 40-foot lengths to suit job conditions.

For further information write to Teale & Co., Dept. C&E, P. O. Box 308, Omaha, Neb., or use the Request Card at page 18. Circle No. 23.

Extended here to its maximum 40-foot length, the new boom can be quickly converted to lengths of 8, 17, 26, or 35 feet.

For more data on any item, circle indicated number on card at page 18.

Kit permits cab control of tail-gate locks

A new control kit designed to permit handy cab operation of dump-truck tail-gate locks is announced by Velvac, Inc.

The complete kit, No. 12R-11, includes a 4-way hand-operated cab valve, 2½-inch air cylinder with 6-inch stroke, four hose assemblies of varying sizes for flexible connections, as well as fittings and anchor couplings—the necessary parts required for connections to the air cylinder and to pass air around dump-body hinge action.

A pressure hold-back valve is also available as an extra safety factor. Set at 50 pounds (or the established safety factor) this valve holds back air to the tail-gate control until the truck air-brake system is above the 50 pounds (or safe braking power). Also, the valve will shut off at 50 pounds to save the remaining air for brakes, in the event the remote-control system is damaged or exhausts too much air.

For further information write to Velvac, Inc., Dept. C&E, 3530 W. Pierce St., Milwaukee 15, Wis., or use the Request Card at page 18. Circle No. 120.

Road planer eliminates gouging, excess dumping

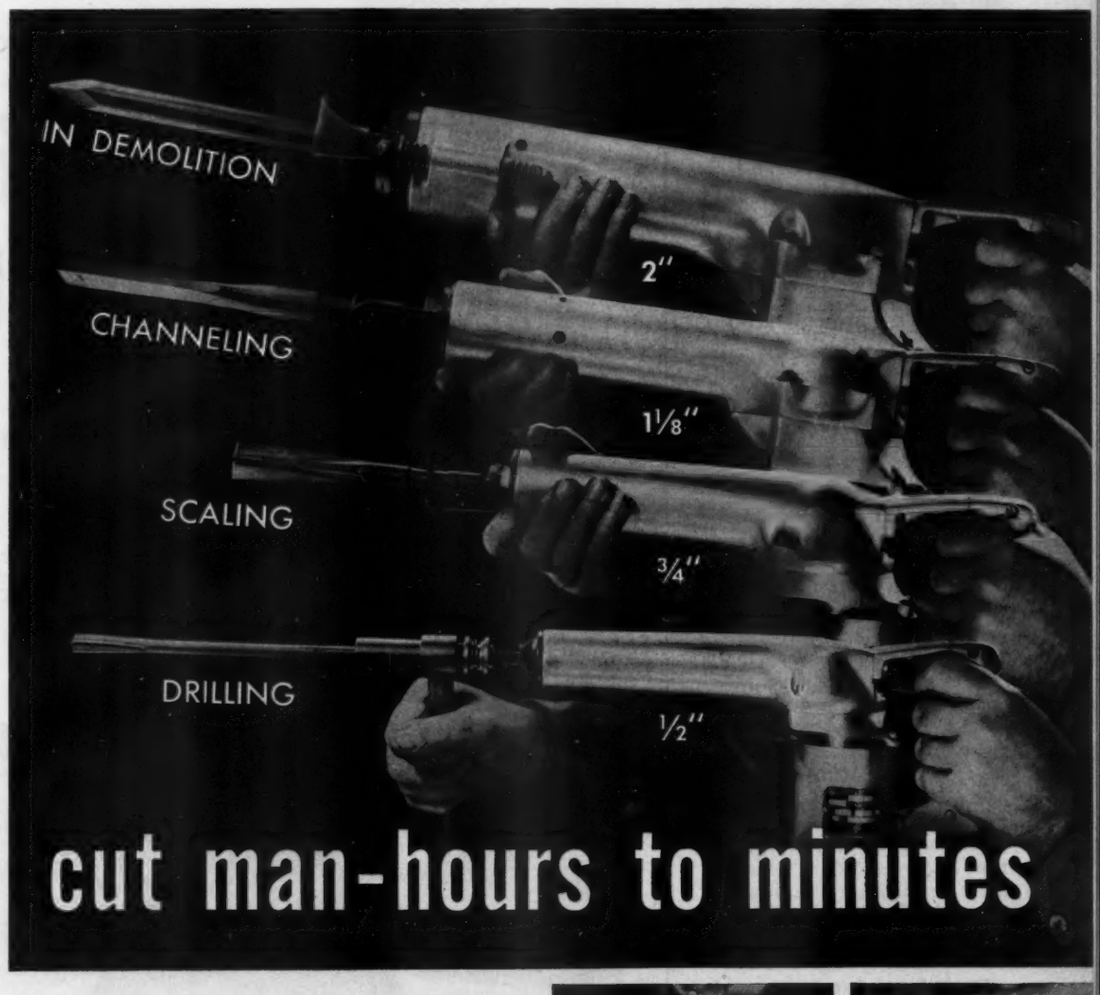
A new road-leveling implement, the Model C-126 DI road planer, is available from the Speedline Implement Mfg. Co.

The machine is designed to permit a constant cutting and filling action that eliminates gouging and excess dumping and minimizes gravel segregation. Although the Speedline road planer is only 25 feet in length, for maneuverability and close turning, it reportedly delivers a long leveling accuracy.

The road planer's 2½-cubic-yard-capacity bucket is suspended at four points and may be controlled either manually or hydraulically. Other features include a 10-foot reversible cutting blade, crank-type stops, depth gage, elevated tongue structure, and dolly carriage.

For further information write to the Speedline Implement Mfg. Co., Dept. C&E, Las Cruces, N. Mex., or use the Request Card at page 18. Circle No. 121.

For more facts, use coupon or circle No. 395→



cut man-hours to minutes

...with Black & Decker's Electric Hammer Line

2200 cutting blows a minute . . . that's how fast a Black & Decker Electric Hammer can break up masonry, scale weld splatter, channel in concrete or drill a hole. Man-hours drop . . . output soars! Every Black & Decker Hammer is *power-packed* to dish it out . . . *ruggedly-built* to take it . . . *user-designed* for easier operation. But see for yourself. Clip and mail this coupon NOW . . . or see your nearby B&D distributor. Four models, ¼" to 2" star drill capacity.

50th YEAR Leading Distributors Everywhere Sell

See Tools-Electric-Yellow Pages-for Service & Sales

Black & Decker

QUALITY ELECTRIC TOOLS

A HAMMER FOR EVERY JOB—a size for every need—that's the B&D Electric Hammer line! Four models give you a choice of ½", ¾", 1⅛" and 2" drilling capacity in concrete. And power-packed B&D Hammers' many *patented* features put them head and shoulders above the rest.

The Black & Decker Mfg. Co., Dept. 1301
Towson 4, Maryland, (In Canada: Brockville, Ont.)
☐ Please arrange a demonstration of a B&D Hammer.
☐ Please send additional information on_____

Name_____ Title_____

Company_____

Address_____

City_____ Zone_____ State_____

☐ Drills ☐ Sanders ☐ Screwdriver ☐ Bench Grinders

These on-highway truck and trailer bodies are 8 feet wide and have a 10-cubic-yard capacity. They will dump to either side, tilting to an angle of 55 degrees to clear sticky loads.

Load capacity increased with side-dumping "train"

A side-dump "train on rubber," made up of a truck with one, two, or more trailers is offered by the Differential Co. These trains are built in two sizes, one for highway use with 15-ton-capacity bodies and a larger off-highway train with bodies carrying 25 tons each.

A solenoid valve on each body is controlled from a switch so located that the driver can dump the individual loads without leaving the cab.

According to the manufacturer, the tare weight of these trailers is exceptionally low because only a short lightweight underframe is needed when the wheels are located directly under the load.

Three bodies can be dumped in less than 30 seconds, and it is not necessary to bring the train to a full stop.

The trailers closely follow the track of the truck on curves. On a 34-foot radius curve, the first trailer tracks only 6 inches inside the truck; the second trailer, 12 inches.

Since each trailer can swing around to a 75-degree angle with the unit ahead, the train can turn around on a 40-foot road by backing twice during the turn; on a 68-foot road without backing.

For further information write to the Differential Co., Dept. C&E, Box 238, Findlay, Ohio, or use the Request Card at page 18. Circle No. 48.

Versatile new auger is heavy-duty digger

An auger said to be particularly efficient in digging rock, frost, or frozen ground, as well as hard shale, soft rock, hardpan, and other terrains, is offered by Trainer Associates, Inc.

Known as PolerBore, it is available in standard diameters from 10 to 36 inches.

Designed to dig to any depth, depending on the type of earth-boring machine used, this auger is equally efficient when applied horizontally.

For further information write to Trainer Associates, Inc., Dept. C&E, New Castle, Pa., or use the Request Card at page 18. Circle No. 122.

Portable shop crane has a 14-foot lift

A new multiposition high-lift portable crane is announced by the Thern Machine Co.

With mast and boom fully extended, the High Boy will lift weights up to 750 pounds to a height of 14 feet. Mast and brace telescope as one unit, and are easily raised up or down by a hand winch mounted on the mast. The boom brace automatically moves with the mast.

The High Boy is easily moved through standard doorways when boom is retracted to full horizontal position. Maximum lift capacity is 1,250 pounds with boom fully tracted to 34 inches and mast brace fully retracted to a li height of 8 feet 8 inches.

All loads are handled with a h winch mounted on the brace. A sh block and 45 feet of 3/16-inch rope is standard equipment, and mits double reaving for extra-h loads.

For further information write the Thern Machine Co., Dept. C 3760 W. Fourth St., Winona, Minn use the Request Card at page 18. C cle No. 123.

SPICER HEAVY-DU
STAND UP UNDER T

Tough Spicer Heavy-Duty Clutches run cooler, las thousands of miles longer on any job where extrem torque loads are being controlled. Many truck flee report Spicer clutch life of 200,000 miles or more And it's no wonder, for Spicer Clutches have thes built-in advantages.

A portable materials lift and hydraulically elevating scaffold called the Sky Witch is available, in a variety of sizes and capacities, from The Charles Machine Works, Inc. The Sky Witch is made with standard platforms ranging in size from 2½×7½ feet to 5×24 feet, elevating to heights from 10 to 24 feet and lifting loads up to one ton. It is available on skids for mounting on the user's conveyance, or it can be mounted on casters, pneumatic-tire wheels, and trailers. Raising and lowering are controlled from the platform by a single lever. For further information write to **The Charles Machine Works, Inc.**, Dept. C&E, 625-30 Birch St., Perry, Okla., or use the Request Card at page 18. Circle No. 138.

Extruded aluminum float for concrete finishing

A new extruded aluminum float for concrete finishing is offered by the Goldblatt Tool Co.

Said to be exceptionally light and strong, the unit has a 6-foot magnesium handle that is flexible enough to "jitterbug" or bring "fat" to the surface of the slab, but stiff enough

to give long-wearing, efficient float action. This handle is designed to prevent hand-cramping during all-day-long use.

The float bottom has a slightly "bowed", broken-in shape for immediate use in the field.

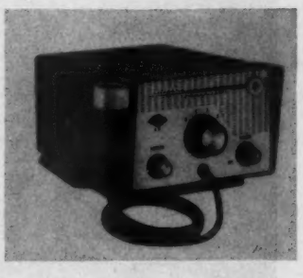
The new model comes in two sizes —42 × 8 inches and 48 × 8 inches.

For further information write to the Goldblatt Tool Co., Dept. C&E, 1910 Walnut St., Kansas City 41, Mo., or use the Request Card at page 18. Circle No. 8.

New 2-way radio is multi-channel unit

The Gonset Division of the Young Spring & Wire Corp. announces the Model G-12 multi-channel Citizens Communicator 2-way radio.

Four crystal controlled channels for both transmitter and receiver provide operational versatility—operators can instantly switch to other channels if



voice traffic is especially heavy or interference is present on the channel in use.

Simple operation is a feature, with no tuning required.

The transmitter is rated at 5-watt power input. The superheterodyne receiver with RF stage has an automatic noise limiter and adjustable "squelch" for muted standby. Also provided is a 2½-watt audio channel with built-in speaker for monitoring at some distance from the set.

The transmitter, receiver, and 12-volt dc/117-volt ac universal power supply are all in one compact unit measuring 4½ inches high, 7 inches wide, and 10 inches deep.

For further information write to the Gonset Division, Young Spring & Wire Corp., Dept. C&E, 801 S. Main St., Burbank, Calif., or use the Request Card that is bound in at page 18. Circle No. 61.

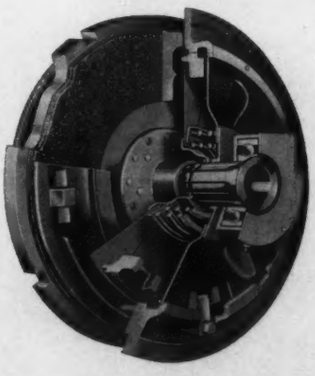
LUTCHES BEAT THE HEAT, OUGHEST PUNISHMENT!

ernal Adjustment—provides a method of restoring the clutch to "like new" capacity. This is accomplished by means of an adjusting ring which can be turned as wear occurs.

ssure Springs—entirely free of contact with the ssure plate. This greatly reduces the possibility of t set of springs with subsequent loss of capacity.

iform Contact Pressure—eliminates uneven wear.

- **Smoother Engagements**—flexing of multiple levers produces cushioning effect, eliminating the need for a more expensive cushion disc.
- **Reduced Friction**—less pedal effort to release clutch.
- **Release Parts Furnished with Clutch**—no further engineering or purchase of parts is necessary.
- **No Special Tools Needed**—maintenance performed without expensive special tools.



Spicer Heavy-Duty Clutches are available in 13″ 2-plate, 14″ single and 2-plate, and 15½″ single and 2-plate sizes. All Spicer Heavy-Duty Clutches are available with ceramic facing for added torque capacity.

WRITE *for Bulletin 500, a 12 page illustrated booklet on Spicer Heavy-Duty Clutches. Contains drawings, technical data, applications and product information.*

DANA Spicer

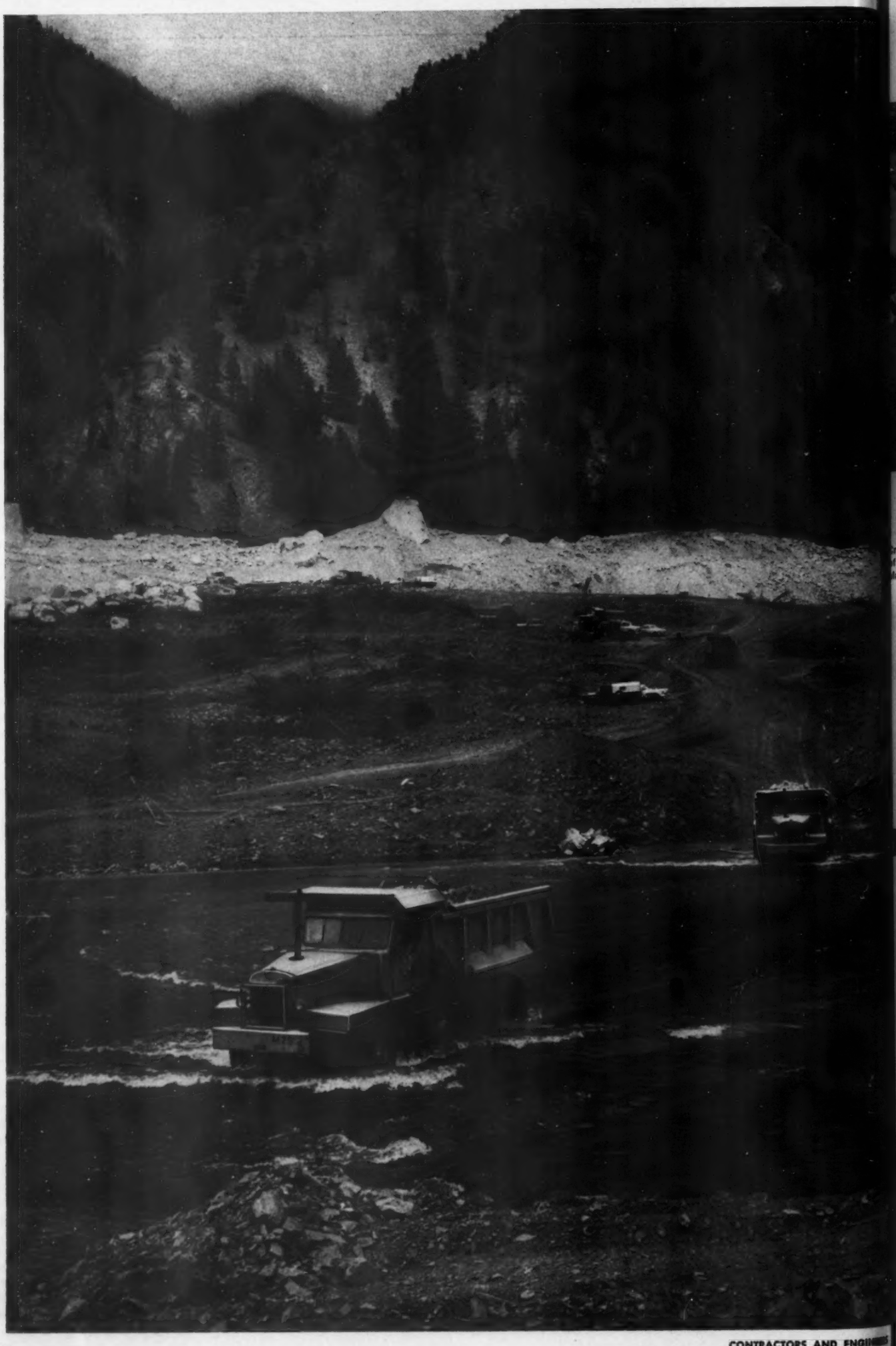
DANA CORPORATION

Toledo 1, Ohio

ving Transportation—Transmissions • Auxiliaries • Universal Joints • Clutches • Propeller Shafts • Power Take-Offs Torque Converters • Axles • Powr-Lok Differentials • Gear Boxes • Forgings • Stampings • Frames • Railway Drives

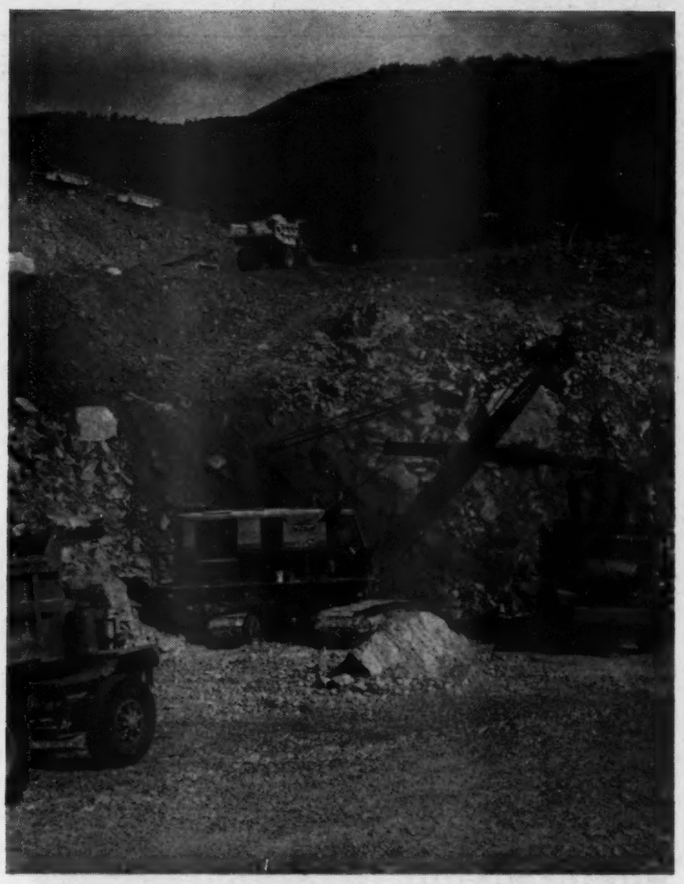
Many of these products are manufactured in Canada by Hayes Steel Products Limited, Merritton, Ontario

For more facts, use Request Card at page 18 and circle No. 336



Thousands upon thousands of tons of rock were dumped along the base of the earthquake-made dam to form a "stilling basin." Here a Mack LVX dumper adds its load of rock to the river bed.

Crossing and recrossing parts of the trapped Madison River with loads of rock fill—all in a day's work for F & S Contracting Co. and the twenty-odd Mack dumpers assigned to the job.



From the base of one of the huge rock slides these Macks worked back and forth to the river bed on a round-the-clock schedule. F & S Contracting Company of Butte, Montana, owns and operates the big trucks.

Tremendous trucking job is aftermath of

The day the mountain fell

When a devastating earthquake shook a Montana mountainside into the Madison River, it created an earth-moving problem of staggering proportions. The river, trapped behind the huge rockslide, had to be quickly released to prevent disastrous floods. Heavy equipment from surrounding areas was mobilized. In a matter of hours emergency roads had been cut through to the remote quake site, and a crash clearance program was under way.

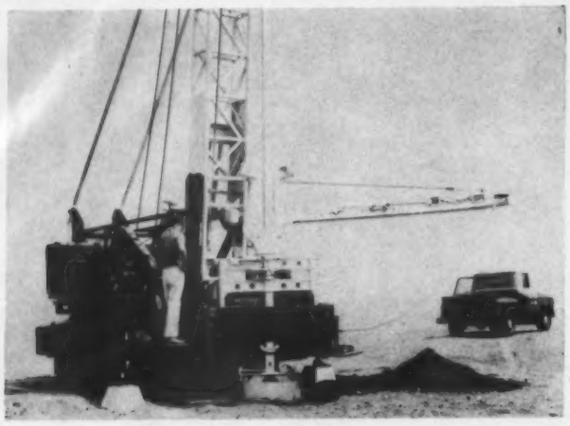
Among the first to get equipment through to the disaster area were crews from F & S Contracting Co., Butte, Montana, with a fleet of heavy-duty Mack dumpers. Day and night on a 24-hour-a-day basis, F & S, veteran of many tough jobs, hustled its Macks through axle-deep mud and water, up almost insurmountable grades and over jagged rock surfaces. Thousands of tons of rock were moved, and F & S reports the Mack trucks detailed to this back-breaking job took it all in stride.

Really tough assignments like this offer indisputable proof of the matchless stamina and dependability built into every Mack vehicle. Unusual or routine, Macks can always be depended on to handle the job efficiently and economically. There's a Mack branch or distributor in your area who will be glad to help you select the model designed to handle *your* important hauling jobs. Mack Trucks, Inc., Plainfield, New Jersey. In Canada: Mack Trucks of Canada, Ltd., Toronto, Ont.

7391

MACK
FIRST NAME FOR
TRUCKS

For more facts, use Request Card at page 18 and circle No. 337



The Model 500 features a derrick length of 42 feet and a total weight of 40,760 pounds.

Earth drills equipped with track crawlers

A new series of earth drills equipped with track crawlers is announced by Calweld, Inc.

Designated Model 500, the standard unit is equipped with gasoline power; diesel power is optional. Derrick length is 42 feet. Total weight is 40,760 pounds. A variety of attachments are available to handle virtually any earth-boring job, making holes from 12 to 120 inches in diameter, and 200 feet deep. A telescoping kelly bar permits drilling to 90 feet without drill stems.

Additional features include a kelly bar crowd to provide additional digging pressure on the bucket drive when digging in tough, hard substrata; a new hydraulically-operated dumping arm for faster, safer dumping; and built-in hydraulic jacks to stabilize and level the rig for precision drilling.

For further information write to Calweld, Inc., Dept. C&E, 7222 E. Slauson Ave., Los Angeles 22, Calif., or use the Request Card at page 18. Circle No. 135.

New rubber waterstop permits fast splicing

Kwik-Seal, a new rubber waterstop that reportedly can be spliced in just 6 minutes, is available from the Gates Rubber Co.

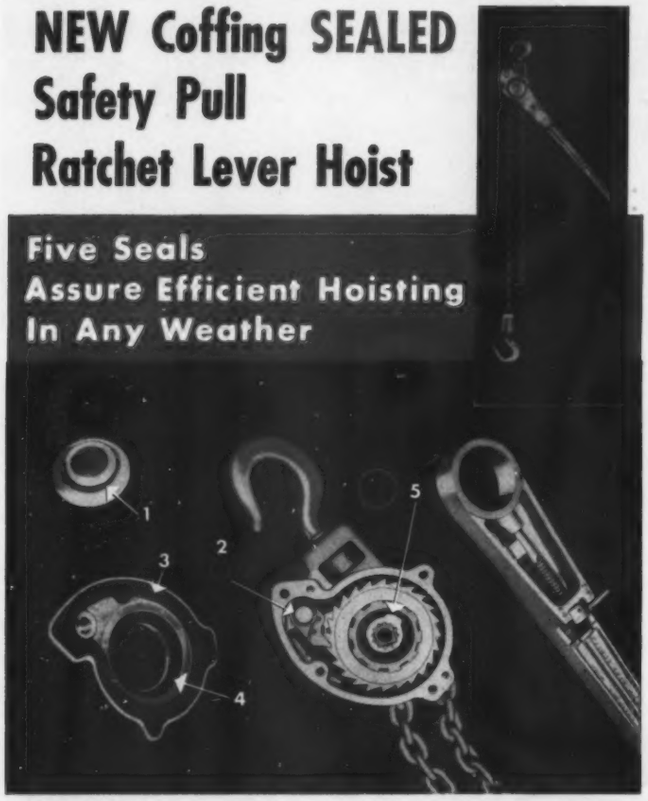
Instead of requiring heat-sealing or vulcanization, the Kwik-Seal splice is chemically bonded. Only a small splicing kit and a simple clamping device are needed. Both the waterstop and the splice meet or exceed government requirements.

According to the manufacturer, the Kwik-Seal rubber waterstop retains a watertight seal even when movement occurs in a concrete joint. It is used to prevent seepage and leakage wherever concrete is used.

For further information write to the Gates Rubber Co., Dept. C&E, 900 S. Broadway, Denver 17, Colo., or use the Request Card at page 18. Circle No. 124.

NEW Coffing SEALED Safety Pull Ratchet Lever Hoist

Five Seals
Assure Efficient Hoisting
In Any Weather



Here is a new hoist designed for safe, efficient hoisting in any weather. Loads will not slip because the brake mechanism of the Safety Pull Hoist is permanently sealed in five places against moisture, oils, chemicals and dirt—all common causes of hoist slippage.

The spring-loaded Neoprene seals assure that brake performance will remain constant under all exposure conditions. Another advantage of the sealed brake is that it will not freeze or lock—is always free to lower even after accidental overload.

Safety features include the exclusive Safety Handle which bends to indicate overload. The free chain control is protected so that it will not accidentally trip.

The Safety Pull Hoist is easy to operate. The handle pull to lift rated load requires minimum effort. Load spotting is precise to within a fraction of an inch. Up and down controls are away from operator's hand so he can use shorter leverage for greater speed with light loads. Ball bearing swivel load hook and plated chain are additional features.

Five models, ¾, 1½, 3, 4½ and 6-ton capacities are available. For additional information ask your distributor or write for Bulletin ADH-78.

COFFING HOIST

DIVISION OF
DUFF-NORTON COMPANY
810 Walter Street • Danville, Illinois

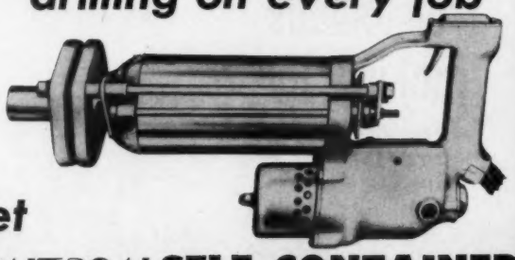
COFFING HOISTS
Ratchet Lever • Air
Hand Chain • Electric

DUFF-NORTON

DUFF-NORTON JACKS
Ratchet • Screw
Hydraulic • Worm Gear

For more facts, use Request Card at page 18 and circle No. 338

for FASTER, EASIER drilling on every job



get SYNTRON SELF-CONTAINED ELECTRIC HAMMER DRILLS

Self-Rotating — automatic bit rotation
Self-Contained — plug directly into power outlet

—available as a single, self-contained unit—plug directly into a-c power outlet—no control box to drag along—only one connection to make.

No more tiresome quarter-turning of bits by hand—SYNTRON'S exclusive, automatic self-rotation of drill bits takes all the work out of drilling holes in concrete, masonry, tile, etc.

SYNTRON Electric Hammer Drills are field proven. They are efficient and dependable tools that will give long trouble-free service with very low maintenance.

Write today for information on all SYNTRON Hammers and Hammer Drills—

SYNTRON SINCE 1921

SYNTRON COMPANY
227 Lexington Avenue Homer City, Pa.

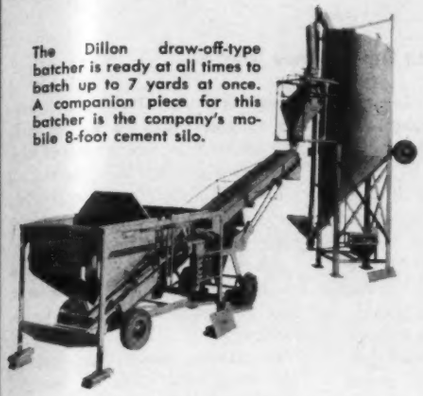
Other SYNTRON Equipment of proven dependable quality

BIN VIBRATORS

GASOLINE HAMMER DRILLS

ELECTRIC SAWS

For more facts, use Request Card at page 18 and circle No. 339



The Dillon draw-off-type batcher is ready at all times to batch up to 7 yards at once. A companion piece for this batcher is the company's mobile 8-foot cement silo.

Mobile aggregate batcher permits direct batching

A mobile draw-off aggregate batcher designed to eliminate "dribble" batching is available from Dillon Steel. It features an 8 to 9-cubic-yard 2-compartment bin, with 4-beam, 30,000-pound-capacity scales and a 24-inch covered belt conveyor. The entire unit is mounted on a drop-frame trailer.

The trailer with king pin will attach to any standard truck-tractor unit; or, with use of a dolly, it can be pulled behind any type of truck.

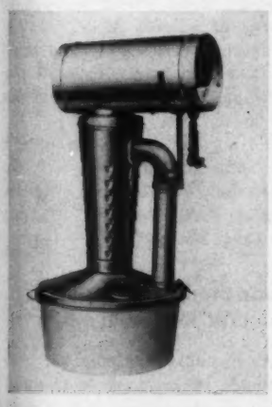
Capacity is said to be about 1 yard per minute. Weight is 11,000 pounds with front dolly.

For further information write to Dillon Steel, Dept. C&E, 700 Fabrication St., Dallas, Texas, or use the card at page 18. Circle No. 125.

New forced-air heater increases heat output

The Scheu Products Co. announces a new type of forced-air heater.

According to the manufacturer, the unit is designed to utilize the features of the Hy-Lo oil-burning sala-



mander, and combines this with a new induced-draft principle that results in improved combustion and heat output.

The heater requires no skilled attendant to operate it, and is easily portable. It stands 43½ inches high and weighs 33 pounds. It produces a minimum of 100,000 Btu per hour.

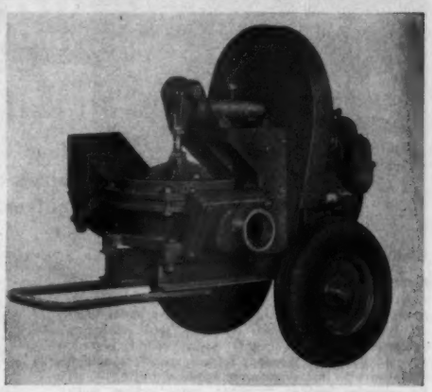
For further information write to the Scheu Products Co., Dept. C&E, 201 Stowell St., Upland, Calif., or use the Request Card at page 18. Circle No. 126.

Announce four new models in diaphragm pump line

The addition of four new diaphragm-type models to the Torrent line of centrifugal pumps is announced by the Hale Fire Pump Co.

The line, consisting of 1½, 2, 3, and 4-inch models, is designed especially for the handling of high-solid-content water and for positive control of seepage. Compactly built and mounted on wheels, they are also said to be easy to handle.

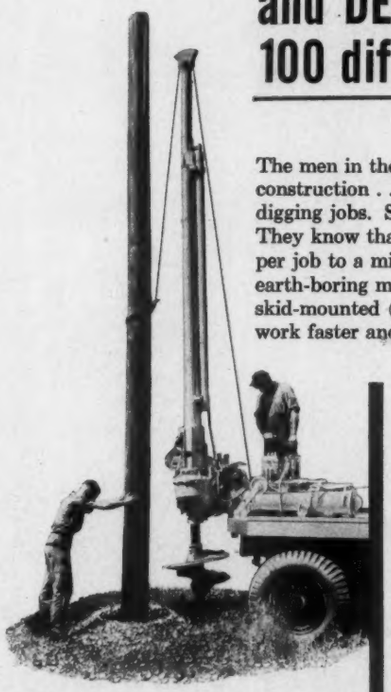
For further information write to the Hale Fire Pump Co., Dept. C&E, 708–716 Spring Mill Ave., Conshohocken, Pa., or use the Request Card at page 18. Circle No. 62.



construction and utility firms use these POWER DIGGERS and DERRICKS in 100 different ways

the big HIGHWAY ...leader in earth-boring equipment

The men in the field like Highway best . . . for construction . . . for maintenance . . . for all kinds of tough digging jobs. So do the men who check costs. They know that Highway equipment reduces man-hours per job to a minimum. In any soil, quality-built Highway earth-boring machines—available in both truck and skid-mounted (with integral power plant) models—work faster and easier and are more dependable.



TELESCOPING DERRICK

Exclusive with Highway! Easily handles poles up to 75′ in length and 4,500 lbs. in weight. Extends to 29′-8″ from the ground. Operates integrally with Highway earth-boring machines. (At left, shown mounted on an HCA model. The HCA digs holes from 9″ to 36″ in diameter and up to 10′ deep.) Telescoping derrick available as optional equipment for Models HC, HCA and HCAMS Highway earth-boring machines only.

POWER LEVELING

An easy turn of the power-leveling mechanism puts your rack bar and derrick in the exact position desired. Makes straight-down digging easy regardless of terrain or truck position.

SWING-BASE

Allows rotation of boring machine 180°—and extension up to 22°. Hydraulic operation. Truck mounted. Permits exact positioning regardless of location or angle.

SPOTTER-BASE

Hydraulically positions skid-mounted earth-boring machines over the hole location. "Reaches" over obstructions—positions anywhere in an 80′ arc.

UTILITY DIVISION
HIGHWAY TRAILER COMPANY
Headquarters: EDGERTON, WISCONSIN

Executive Offices: 250 Park Avenue, New York 17, N. Y. Executive Sales Office: 221 N. LaSalle Street, Chicago 1, Ill. Plants in Edgerton, Wis. • Stoughton, Wis. • Hazleton, Pa.

Manufacturers of: Commercial Trailers • Dry-Bulk Haulers • Cargo Containers—Land, Sea and Air • Public Utility Bodies • Earth-Boring Machines • Pole and Cable Reel Trailers • Winches • Power Take-offs • Service Accessories

INVESTIGATE HIGHWAY'S NEW LEASING PLAN

For more facts, use Request Card at page 18 and circle No. 340

"BERG"
CONCRETE
SURFACERS

for: bridges, highways, airport runways, dams, culvert, floors, walls.

Model H-8 and H-10 (above). Gasoline powered unit especially designed for surfacing concrete highways, runways, streets, floors. Includes exclusive power take-off for attaching "BERG" flexible shaft surfacing equipment. Model A (right) is lightweight, electric powered unit that suspends from operator's shoulder. Equipped with interchangeable heads and attachments for surfacing bridges, buildings, dams, culvert, walls or similar surfaces. Wire or write for details.

CONCRETE SURFACING MACHINERY CO.
4665 Spring Grove Avenue Cincinnati 32, Ohio

For more facts, use Request Card at page 18 and circle No. 396

Product Parade

Announce new sealant for runway joints

The Chem Seal Corp. of America announces a sealing compound specifically designed for concrete runway joints on airfields.

Designated Chem Seal CS 2414, it is a liquid rubber compound to which a curing agent is added just before installation. It remains semifluid long enough to permit application to the concrete joints and then rapidly cures to a solid rubber state, adhering intimately to the sides of the joint. The rapid cure feature is said to permit landing and take-off of aircraft in a considerably shorter period of time after application than when using other materials. Its hard, resilient cure, fuel and water resistance and adhesion to concrete result in a permanent seal, easily tolerating repeated expansion and contraction cycles, with a temperature range of minus 65 degrees to 200 degrees F.

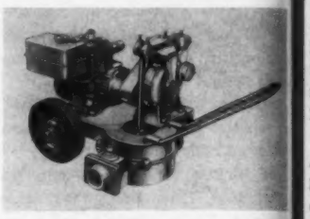
Repeated exposures to jet blast have no noticeable deteriorative effect upon CS 2414, according to the manufacturer.

For further information write to the Chem Seal Corp. of America, Dept. C&E, 12910 Panama St., Los Angeles 66, Calif., or use the Request Card at page 18. Circle No. 127.

Small diaphragm pump for soupy seepage

A new addition to the firm's line of diaphragm pumps is announced by the Construction Machinery Co.

Designated Skwee-Gee, this 2-inch heavy-duty unit is designed for ditch



or trench work where seepage is soupy or where exceptional air-handling capacity is required.

It is exceptionally portable (weighs 165 pounds) and is said to have excellent priming characteristics which also make it ideal for high-lift applications or small wellpoint dewatering jobs.

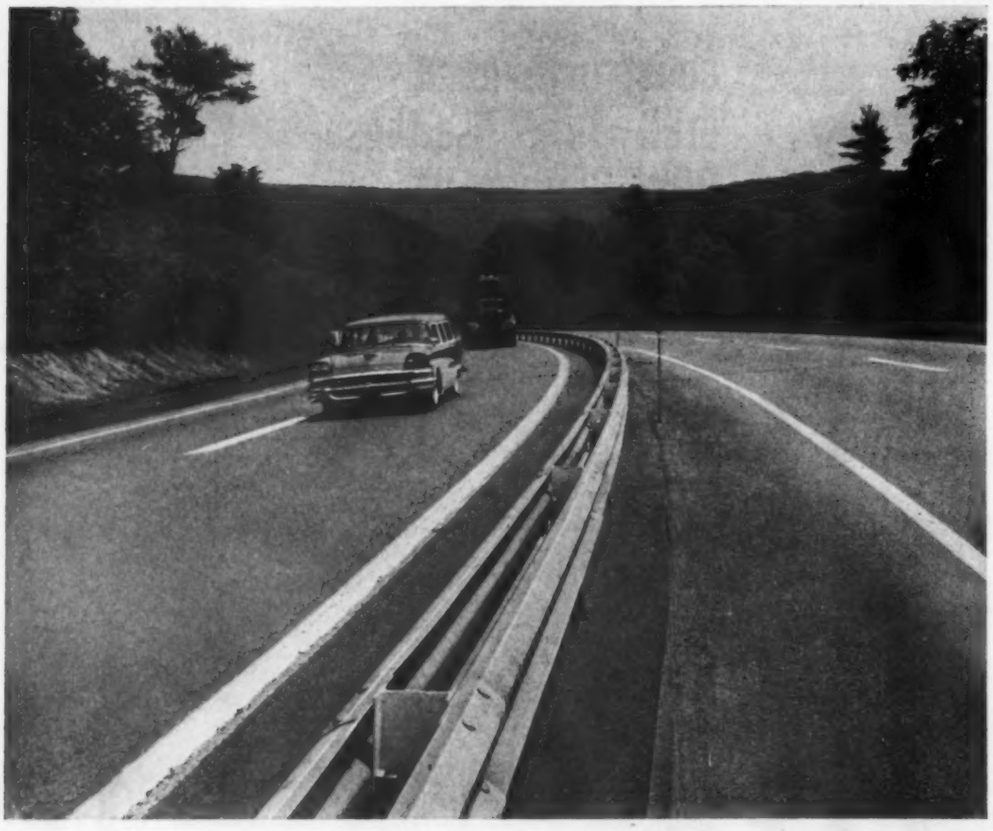
The new pump is made of fabricated steel and is available in two models: Model FD-L2 powered by Briggs & Stratton Model 80351 4-cycle air-cooled engine; and Model FD-L2E with 1-hp single-phase or three-phase 1,200-rpm electric motor.

For further information write to the Construction Machinery Co., Dept. C&E, 447 Vinton St., Waterloo, Iowa, or use the Request Card at page 18. Circle No. 100.

Rear-mounted ripper for L-W motor graders

A hydraulically operated rear-mounted ripper, designed to rip asphalt pavements to a 12-inch depth, is announced by the American Tractor Equipment Corp. The unit is designed for use on LeTourneau-Westinghouse 660 and 550 motor graders.

The ripper, which can accommodate up to seven ripping shanks, is mounted to the motor grader's rear frame where the weight and hydraulic power provide fast penetration and efficient ripping in the toughest material. According to the manufacturer, the design and contour of the ripper shanks enable them to lift and break the material for easier handling.



Galvanized Beam Guard Rail
Cuts Maintenance Costs to the Bone

When you specify Bethlehem galvanized beam guard rail, you can count on these advantages:

1. While the cost for erecting is comparable to that of painted rail, the final installed cost is often *less*, due to the elimination of the painting crew.
2. Galvanized rail virtually does away with maintenance, saving the high cost of periodic repaintings.
3. Should it be desirable to restore reflectivity after a few years, only the exposed outer surface need be painted. The inner surfaces are still protected by the galvanizing. This greatly reduces the painting costs.
4. The electrochemical action of the zinc coating assures continuing protective action even if a portion of the rail is exposed by damage.
5. Galvanized rail will last as long as any competitive material, at lower cost, and at no sacrifice in strength.

For full details, call our nearest district sales office. They'll be glad to give you the full story on Bethlehem galvanized beam guard rail.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA. *Export Distributors* Bethlehem Steel Export Corporation

BETHLEHEM STEEL

For more facts, use Request Card at page 18 and circle No. 341

The Ateco ripper for integral mounting on LeTourneau-Westinghouse 550 and 660 graders rips asphalt to a depth of 12 inches.

while tending to compress the motor grader's tires to give better traction.

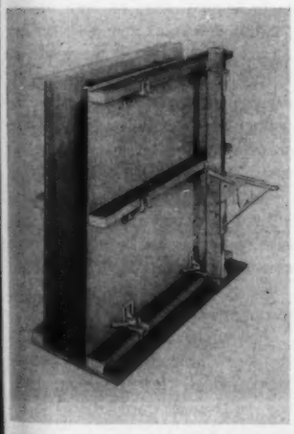
Available attachments include straight or curved shanks, with either steel or spherulite replaceable points; splitter and shank guards; and a scoring disk for cutting asphalt pavements to limit the ripping area as required.

As an added feature, the ripper has a "hinge-away" action that keeps points retracted when not in use yet instantly ready for work when the ripper has been lowered to ground level.

For further information write to the American Tractor Equipment Corp., Dept. C&E, 9131 San Leandro Blvd., Oakland, Calif., or use the Request Card that is bound in at page 18. Circle No. 115.

Concrete forming system designed for versatility

A new concrete forming system for all types of construction, from light to extremely heavy, is announced by Gates & Sons, Inc. It utilizes (with

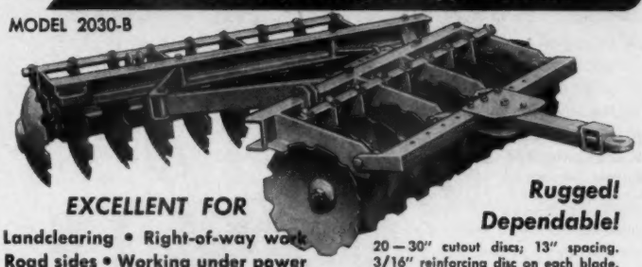


plywood sheets) five devices which include two types of heavy-duty breakback ties, a cam-lock tie bracket, a stiff-back cam, and a scaffold bracket. No ribbing or special hardware attached to the panels is necessary, and the use of stiff-backs and wales is actually cut in half, according to the manufacturer.

For further information write to Gates & Sons, Inc., Dept. C&E, 80 S. Galapago St., Denver 23, Colo., or use the Request Card at page 18. Circle No. 70.

AMCO BRUSHMASTER
Heavy-Duty Hinged Type Offset

MODEL 2030-B



EXCELLENT FOR
Landclearing • Right-of-way work Road sides • Working under power lines, etc., • Keying in new fills • Mixing in water • A must for proper compaction.

Rugged! Dependable!
20—30" cutout discs; 13" spacing. 3/16" reinforcing disc on each blade. Cuts from 8'6" to 18'. Weighs 6,800 to 12,000 pounds. Equipped with Fafnir Tri-ply ball bearings; button type grease fittings.

ALEXANDER MANUFACTURING COMPANY
No 1 AMCO Drive SYcamore 8-4791 PICAYUNE, MISS.

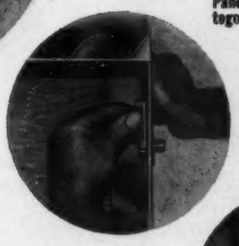
For more facts, use Request Card at page 18 and circle No. 397

simple tie installation...

secret of FASTER CONCRETE FORMING

SECONDS TO INSTALL UNI-FORM TIE AND ASSEMBLE PANELS

1. UNI-FORM Tie Loop placed in square tie hole of Panel.



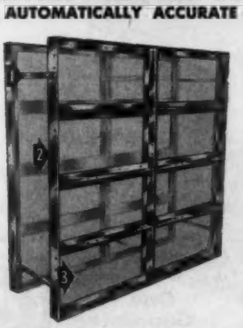
2. Tie Key set into the Tie Loop. Panel and Tie are now locked together into integral unit.

3. Next UNI-FORM Panel is placed in position. Tie Loop automatically enters square tie hole. Key is dropped in—assembly is complete. NO COMING BACK TO "FISH" TIES.

When you can tie and lock two concrete form panels in a few seconds, you're forming concrete fast! This is exactly what you can do with the UNI-FORM Panel System—the fastest system of forming concrete ever developed.

Faster tieing is only one of many UNI-FORM Panel features that makes them *the* pre-fab forms contractors are using on every kind of concrete construction. Write for the UNI-FORM Panel System Catalog and full details . . . or, call your nearby Universal Distributor or Branch Office for personal attention immediately.

UNI-FORM PANELS ERECT INTO A TIGHT, RIGID, AUTOMATICALLY ACCURATE CONCRETE FORM



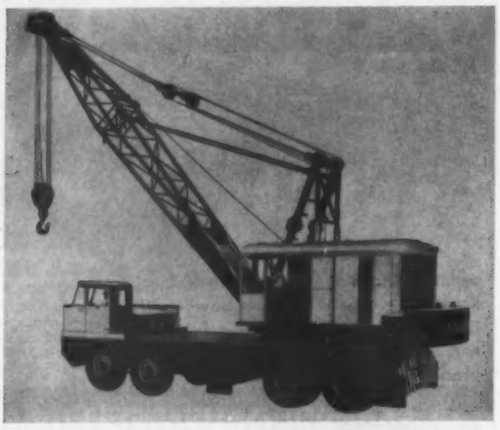
1. Ties spread, lock UNI-FORMS into a form with automatically accurate wall thickness.
2. Steel frame provides structural strength and rigidity. Minimum alignment and bracing.
3. Best Exterior Grade Plywood face provides nailing surface. Easily turned for further reuses.

"Products from the Gold Tool Room"

UNIVERSAL FORM CLAMP CO. 1238 N. KOSTNER AVENUE • CHICAGO 51, ILLINOIS

BRANCH OFFICES and WAREHOUSES:
ATLANTA BALTIMORE CLEVELAND HOUSTON
LOS ANGELES SAN LEANDRO TORONTO

For more facts, use Request Card at page 18 and circle No. 342



The Moto-Crane Model MC-760 travels at speed up to 37.6 mph, and has air brakes on all eight wheels.

Offer heavy-duty crane on all-new carrier

The Thew Shovel Co. announces the Lorain Model MC-760 65-ton Moto-Crane on an all-new 8×4 carrier.

The unit travels up to 37.6 mph, and has air brakes on all eight wheels.

The firm's Power-Set outriggers are standard equipment on this model. All four outriggers can be extended to working position in less than 60 seconds. They automatically adjust to rough terrain, level the machine, and are held in position by automatic wedge locks free of hydraulics. Quick-disconnects are provided so that outrigger boxes and beams can be unpinned for reduced weight.

Turntable features include pre... sion control of load raising and lowe... ing with a spur gear-driven boo... hoist; folding gantry lowered ... power to turntable cab height; ... counterweight removable by built-... hydraulic jacks.

The machine is equipped with a ... foot basic boom. The sections are pi... connected, and additional sections ... easily added to give up to 170 feet ... main boom.

For further information write ... The Thew Shovel Co., Dept. C&... 28th & Fulton Road, Lorain, Ohio, ... use the Request Card at page ... Circle No. 41.

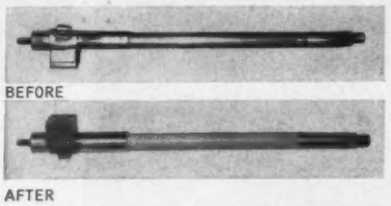
Save up to 50% on rebuilt hubs and steering shafts on parts exchange plan

FINAL DRIVE HUBS

Rebuilt Final Drive Hub

You can save up to 50% by having your worn final drive hubs and steering shafts rebuilt on a parts exchange plan. All work is guaranteed and endorsed by hundreds of satisfied customers.

STEERING SHAFTS



BEFORE

AFTER

This shaft is from a No. 12 Motor Grader hydraulic steering booster. Note how badly it is worn. New stock was welded to the worn part and the shaft was machined to original dimensions.

FOR FURTHER INFORMATION CONTACT YOUR NEAREST CATERPILLAR DEALER

3500 MAIN AVE. — **BUTLER MACHINERY CO.** — FARGO N. DAKOTA

CATERPILLAR DEALER FOR THE EASTERN HALF OF NORTH DAKOTA

Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

For more facts, use Request Card at page 18 and circle No. 343

GRIPHOIST TIRFOR

Engineers "In the Know" Say:

"Use portable, manually-operated GRIPHOIST for any lift or hard pull . . . now saving contractors thousands of man hours . . . Often gets job done before crane or power equipment can be set in action . . . Repeatedly does work requiring a 6 or 8 man rigging crew . . Especially useful in placing factory equipment, laying concrete pipe, clearing storm damage, and handling underwater diver jobs. Safety record unmatched."

STANDARD GRIPHOIST ⅛ IN. WIRE ROPE

T-35 HEAVY DUTY GRIPHOIST ⅜ IN. WIRE ROPE

UNLIMITED CABLE TRAVEL

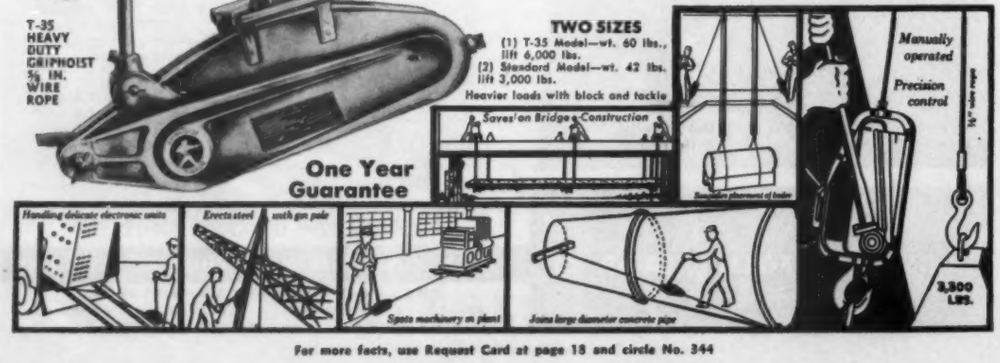
USED IN COMMERCIAL AND NAVAL SHIPYARDS AND IN VARIOUS ARMY AND AIR FORCE INSTALLATIONS

PRINCETON GRIPHOIST, INC.
32 George St., Boston 19, Mass.

GRIPHOIST, INC.
744 Harrison St.
San Francisco 7, Calif.

TWO SIZES
(1) T-35 Model—wt. 60 lbs., lift 6,000 lbs.
(2) Standard Model—wt. 42 lbs. lift 3,000 lbs.
Heavier loads with block and tackle

One Year Guarantee

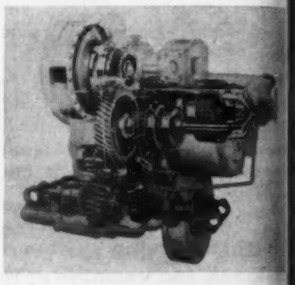


For more facts, use Request Card at page 18 and circle No. 344

Two transmissions offered with front-end loader

The Allis-Chalmers TractoLoad... Model TL-14 is now available wi... either the Allison transmission or t... new Tractomatic power-reversi... transmission.

On the 4-speed Tractomatic, ... single hydraulically operated steer... ing-column lever controls both fo...



ward and reverse movement witho... clutching, shifting gears, or stoppi... the machine.

First gear offers a forward speed o... 3.2 mph and a reverse speed of 4.... mph; second gear, 4.8 mph forward, ... 6.3 mph reverse; third gear, 11.9 mp... forward, 15.7 mph reverse; an... fourth gear, 22.3 mph forward, 29.... mph reverse. The manufacturer re... ommends the Allison transmissio... specifically for operations involvi... relatively long haul distances.

Parts on the Tractomatic tran... mission are easily accessible to facil... tate maintenance. Each clutch is ac... cessible for adjusting by removing ... cover. Gear operation is completel... mechanical.

For further information write ... the Allis-Chalmers Mfg. Co., Deerfie... Works, Dept. C&E, Deerfield, Ill., ... use the Request Card at page 18. Ci... cle No. 128.

New 8-batch trailer has remote-control tripping

A new 8-batch trailer with remote-controlled hydraulic trippers has been introduced by the Galion Allsteel Body Co.

The trippers, mounted on the body side, provide instantaneous release of batches from a panel inside the cab.

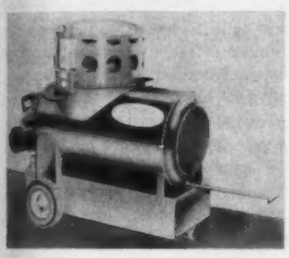
Other innovations include: hydraulically operated "levelizers" on rear tandems to minimize the danger of

Hydraulically operated batch trippers, mounted on the body side, provide instantaneous release of batches from a remote control panel in the cab.

tipping when the body is in raised position; and a special 30-inch tail gate to guard against dumping damage to tail gate and paving skip. According to the manufacturer, this batch trailer can be converted to material-hauling operations when not in paving use.

For further information write to the Galion Allsteel Body Co., Dept. C&E, Galion, Ohio, or use the Request Card that is bound in at page 18. Circle No. 46.

Portable heater produces up to 400,000 Btu



A portable heater that is adjustable to any output up to 400,000 Btu is announced by Electronics, Inc.

Designated Electro-Jet, it features push-button control, lights instantly, and produces up to 500 degrees of heat in 70 seconds. A special thermostat maintains the desired temperature. A limit control automatically shuts off the unit should the fan quit for any reason.

The fully automatic oil burner uses No. 1 or 2 fuel oils. The fan, powered by a GE 1/3-hp thermal overload motor, delivers up to 2,500 cfm.

The Electro-Jet runs on regular 110/115-volt, 60-cycle ac power. The unit is mounted on 10×2.75 semi-pneumatic tires and has a removable tow bar for easy handling.

For further information write to Electronics, Inc., Dept. C&E, P. O. Box 150, Vermillion, S. Dak., or use the Request Card at page 18. Circle No. 35.

For further information on any product described in this section circle the indicated number on the Request Card at page 18.

Offer leveling device for earth-boring rigs

The Utility Division of the Highway Trailer Co. has available a new power-leveling mechanism, now available in two models of its earth-boring machines.

The device, said to make positioning fast and easy in all directions, is optional equipment on Highway's Model HDA and HDAMS earth-borers. With dual power-leveling control conveniently located at the top, a turn of the mechanism puts the rack bar and derrick in the exact position desired.

This feature permits rapid leveling wherever necessary on guardrail and line construction jobs. Designed for positioning in any angle up to 90 degrees, the mechanism is ideal for work in rough, uneven terrain. It also permits fast maneuvering of machine fore and aft, left to right. This flexibility makes straight-down drilling quick and effortless, regardless of truck position, states the manufacturer.

For further information write to the Utility Division, Highway Trailer Co., Dept. C&E, Edgerton, Wis., or use the card at page 18. Circle No. 6.

A WILLIAMS DIGGER FOR EVERY PURPOSE!

Available in twelve models and a wide range of hole diameters from 12 to 96 inches and depths to 110 feet. Whether truck, tractor or specially-mounted the Williams Diggers will serve any purpose and, in this respect, are virtually custom rigs for the earth-boring contractor. Williams Diggers are unexcelled for sinking holes for everything from electric line poles to architectural foundation piers.

HUGH WILLIAMS

HUGH B. WILLIAMS MFG. CO.
8330 Lovett Ave. • Dallas, Texas
Manufacturer

JOSLYN MFG. & SUPPLY CO.
2101 Corinth St. • Dallas, Texas
Distributor

WRITE FOR ILLUSTRATED DESCRIPTIVE LITERATURE

For more facts, use Request Card at page 18 and circle No. 345

EAGLE SURVEYING INSTRUMENTS...

"NONE MORE PRECISE... NONE LOWER PRICED!"

And now, the Eagle is even *more* precise due to the addition of these new features:

*—All screws now nickle silver
*—Exclusive: fixed viscosity lubricant over wide temperature range
... plus:
*—New additional & improved accessories
*—24-hour parts replacement service
*—Full 1-year Guarantee
*—Precision assembled to hold adjustment under roughest field conditions

* $470 with tripod

New model 6B, 6" circle

No other transit on the American Market today offers you so much value for so little money. Investigate Eagle today at a Blue Printer's or Instrument Shop near you. This dealer will gladly accept your obsolete instruments in trade. Write for his name today.

TEXAS-ASIATIC IMPORT CO.
2127 Ft. Worth Ave., Dallas 8, Texas

Send the name of my nearest Eagle dealer and Eagle literature immediately.

NAME_____ ADDRESS_____ CITY_____ ZN____ STATE_____

For more facts, use coupon or Request Card at page 18 and circle No. 346

The penetration, breaking and digging action of the Libu, due to the plow-formed cutting edge and the absence of side walls, contribute to increased production by the rig.

A 3-way dumping bucket for tractor-loaders

A 3-way dumping bucket for Caterpillar Traxcavators is offered by the Libu Shovel Co. AB.

The Libu bucket is designed as a U-shaped channel with open ends, and forms a spade operated by hydraulic power. The bucket is tilted (backwards-forward) and lifted by the arm system of the tractor and side dumped to the right or the left by an additional hydraulic cylinder fitted to the bucket support. The bucket support also includes a "tip-lock" arrangement that keeps the bucket fixed in the horizontal digging position without strains on the side-dump hydraulics. The tip-lock is hydraulically operated from the operator's seat by a foot pedal.

Because of the minimum need side clearance, Libu buckets can used in extremely narrow sites, st the manufacturer. The open buck design permits the bucket to load kind of material—even boulde bigger than the bucket itself.

The Libu bucket is available Caterpillar Traxcavators No. 9 955, and 933 in five types for hea duty or normal loading. The u units are completely interchangea with all standard accessories for t Traxcavators, and reportedly can mounted within one or two hours the original arm system without modification of the tractor.

For further information write the Libu Shovel Co. AB, Dept. CA Sturevagen 18, Stocksund, Swede or use the Request Card at page 1 Circle No. 16

A grader for CONTRACTORS

Competitive bidding factors on modern construction jobs . . . the pressure of work schedules . . . the exacting specifications—all demand much more from a motor grader now than a few years ago. Thus, greatly increased earth-moving ability, stamina, minimum maintenance, and ease of handling are what contractors want in motor graders to meet their needs today and tomorrow.

● Three Galion 160 motor graders on construction of Ohio Highway No. 1 near Conneaut.

Effective Weight and Power

One grader which is meeting all demands with spectacular on-the-job performance is the GALION model 160. Its 30,020 lbs. weight (with scarifier) balanced to the 160 hp direct-starting diesel engine produces tremendous "push power" on the extra-large hydraulic power-shift moldboard.

This efficient pay load combination speeds operations, moves more dirt per pass, reduces the number of passes needed to do the job—gives additional profits or bidding advantage to contractors.

Easy and Safe Control

Any experienced operator who has had the pleasure of putting the GALION 160 through its paces will agree that the 160 is amazingly easy to operate. Features which aid the operator include: combination manual with hydraulic power steering, no "kick back" in the hydraulic control system which is Galion-designed and Galion-built, two-stick shift mechanism for the six-speed constant-mesh transmission, 10 ply 14.00 x 24 tires front and rear, four-wheel hydraulic brakes, complete visibility of blade, and conveniently grouped operating controls.

Simple, Economical Maintenance

The GALION 160 grader is designed for exceptionally long life and for easy servicing. For instance, the positive-acting leaning front wheels have only two grease fittings to service.

The GALION constant-mesh transmission and final drive are engineered to ratios which reduce stresses and wear to a minimum. It is common for these transmissions to log over 10,000 operating hours without need of overhaul. The powerful Cummins diesel engine is renowned for its economical operation, freedom from trouble, and dependable performance at any temperature or altitude.

The special feramic-faced, spring-loaded, heavy-duty clutch is not affected by heat or cold. No cooling system is required on this simple, dry-type clutch; consequently frequent servicing is not necessary. Other features of rugged construction that value-conscious contractors appreciate in the GALION 160 are the heavy front axle assembly, extra large (3⅜" x 2") front wheel spindles, full-floating two-piece drive axles which carry no weight, and the extra strong single member box-type frame.

When the going is rough and tough, you will be glad you have GALION 160 Motor Graders on the job. Write for Bulletin No. 421. The Galion Iron Works & Mfg. Co., Galion, Ohio, U.S.A.

● Whether doing precise finish grading, carving out a haul road over virgin ground, or slicing down a steep bank, the GALION 160 has the speed, power, guts and precision control to meet every demand.

For more facts, use Request Card at page 18 and circle No. 347

New heavy-duty trucks feature V-8 engines

The Diamond T Motor Truck C announces two new conventio models with V-8 engines.

According to the manufacturer, t trucks are designed for maxim economy of operation in the heav service, on the highway or off. T are light in weight and provide number of major improvements refinements over previous models.

Gross-combination-weight rati go as high as 78,000 pounds, and ratings go up to 60,000 pounds.

For further information write to Diamond T Motor Truck Co., De C&E, 4401 W. 26th St., Chicago 23, I or use the Request Card that is bou in at page 18 of this issue. Circle N 109.

FOUNDATION CONSTRUCTION

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SPECIAL DRILLING PROBLEMS

Offices in Atlanta, Ga., Pittsburgh, Pa., Washington, D.C., Cleveland, Ohio

Wire or phone for a quotation on your next foundation job — ANYWHERE IN THE WORLD

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For more facts, circle No. 348

SPECIAL HYDRAULIC DUMP TRAILERS

whatever the material...

let a dunham carry your load

Designed to meet your individual hauling requirements, Dunham special hydraulic dump trailers employ the same advanced engineering developments as Dunham aggregate trailers.

Dunham trailers

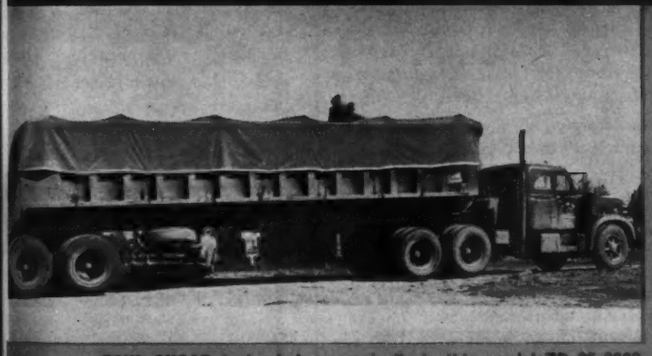
dunham manufacturing company Division of Anderson-Dunham, Inc.

Sales office and factory: Post Office Box 431 • Minden, Louisiana • Telephone: FRanklin 7-3535

NOTE TO DISTRIBUTORS: We are looking for good distributors in the following states:

Alabama, Colorado, Illinois, Indiana, Kansas, Kentucky, Maine, Nebraska, New York, North Carolina, Ohio, Pennsylvania, South Carolina, Virginia, West Virginia and a good export outlet

We finance retail sales for distributors.



RAW SUGAR is hauled economically in this model TD 35-3933.

LIME or CEMENT are protected against weather in this covered model TD 35 28-TSP.

LIGHT WEIGHT AGGREGATES are delivered to a concrete plant with this model TD 20-2322S.

ROAD MATERIAL may be windrowed, dumped, or stockpiled with bottom dump model TD 15 33-BDS.

An automatic spray curing machine for membrane-type curing of highway slabs is available from the Flexible Road Joint Machine Co. According to the manufacturer, the Flex-Plane's improved double spray head, coupled with a high-efficiency pump, insures more coverage with economy of material. Only a small portion of pump output is used at the spray nozzles. Excess material is pumped back into the drum, eliminating waste and preventing material in the drum from separating and settling. A fluid regulator maintains a constant spray pattern. The Flex-Plane curing machine can be used with a single operator or may be preset for unattended operation. Burlap drag, brooming, or belting attachments can be supplied as optional equipment. For further information write to the **Flexible Road Joint Machine Co.**, Dept. C&E, 1750 Thomas Road, Warren, Ohio, or use the card at page 18. Circle No. 66.

Screw-feed mountings for tunnel drilling

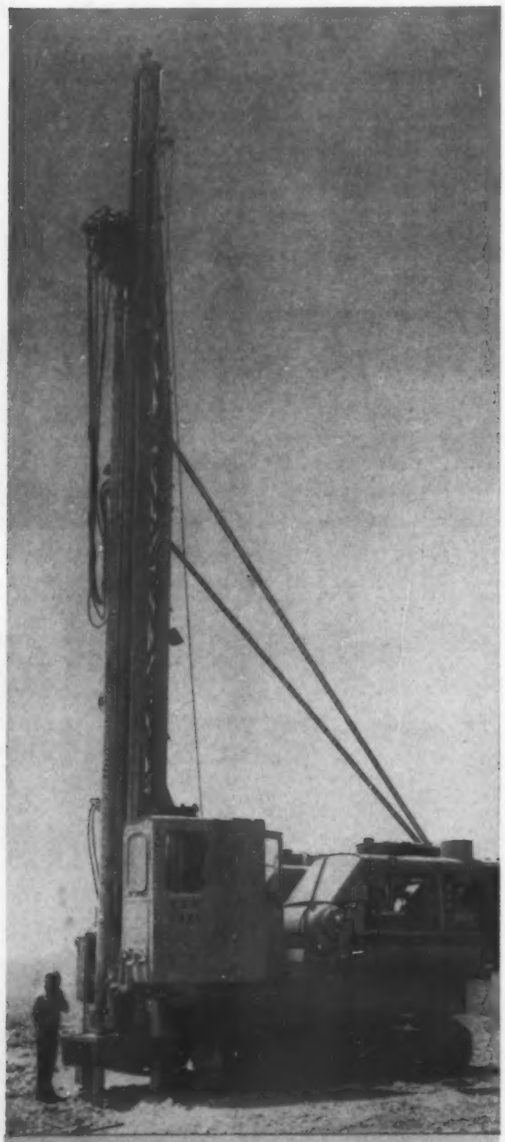
The Gardner-Denver Co. has in troduced new channel screw-fe mountings for jumbo drilling op erations in tunnels.

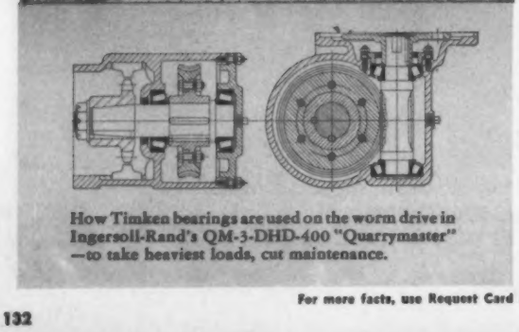
The 2MC series screw feeds mou 4½ and 5½-inch percussion dri They are operated by remote on trol, and controls for both the dri and the feed motor may be mounte in any location for maximum acce sibility. Automatic wet controls ar standard on 2MC mountings, but i is simple to convert them for dr drilling, states the manufacturer.

A Gardner-Denver 5-cylinder ra dial air motor powers the mountin The motor is self-lubricated by it exhaust system.

The Model 2MC10 has a 10-inc change; 2MC12, 12-inch change; an 2MC14, 14-inch change.

For further information write t the Gardner-Denver Co., Dept. C&E S. Front St., Quincy, Ill., or use th Request Card at page 18. Circle No. 129.





How Timken bearings are used on the worm drive in Ingersoll-Rand's QM-3-DHD-400 "Quarrymaster" —to take heaviest loads, cut maintenance.

How Ingersoll-Rand assures accuracy of "Quarrymaster's" drill feed under 900-blow-per-minute drilling

STRIKING 900 blows per minute and drilling through all kinds of hard broken rock formations puts terrific loads on the air motor that feeds the "Quarrymaster" drill. Yet the motor assures accurate, positive control of drill feed; fights a tight steel when drilling broken and seamy ground. One big reason the motor works so dependably is that the worm gear is mounted on Timken® tapered roller bearings. Ingersoll-Rand selected Timken bearings because . . .

1. *They take all loads.* The tapered design of Timken bearings enables them to take *any* combination of radial and thrust loads. And full line contact between rollers and races gives Timken bearings *extra* load-carrying capacity—to take heavy shock loads.
2. *They reduce maintenance, last longer.* Because they hold shafts concentric with their housings, Timken bearings make closures more effective in keeping dirt and moisture out, lubricant in, maintenance down. Bearings and parts last longer.

And Timken bearing-equipped machines give you the extra advantages of Timken Company leadership in tapered roller bearing design plus service from graduate engineer salesmen. Backing this leadership are the most modern testing, research and development facilities in the bearing industry.

When you buy Timken bearings you get . . . 1) Quality you can take for granted. 2) Service you can't get anywhere else. 3) The best-known name in bearings. 4) The pace setter in lower bearing costs. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable: "TIMROSCO". *Makers of Tapered Roller Bearings, Fine Alloy Steels and Removable Rock Bits.*

BETTER-NESS rolls on

TIMKEN®

tapered roller bearings

DIESEL ENGINE GENERATOR SETS

Immediate Delivery from Inventory

Any voltage; 50 or 60 cycle. Available in stationary, mobile or portable model. Following listing is only partial.

1420 kva Fairbanks-Morse model 38D-8⅛ (photo above)
1375 kva General Motors model 278A
1250 kva General Motors model 567
938 kva General Motors model 567
625 kva General Motors model 278A
625 kva American Locomotive Co. model 539
412 kva Worthington model CC
375 kva General Motors model 268A
312 kva General Motors model 268A
250 kva General Motors model 268A

A. G. SCHOONMAKER Company, Inc.

Foot of Spring St. Sausalito, Calif. EDgewater 2-1490
50 Church St., N. Y. 7, N. Y. Digby 9-4351

For more facts, circle No. 351

The Mulkey Car-Un-Loader can be placed for action and set in operation in a matter of minutes.

New conveyor unloads hopper-type freight cars

A portable undercar conveyor for unloading hopper-type freight cars is available from Sam Mulkey Co.

Called the Car-Un-Loader, the unit can be used efficiently with the firm's portable belt conveyor so that materials can be moved from the car hopper and into the receiving hopper of the belt at the same rate of speed. Material may thus be loaded into trucks or stockpiled as much as 50 feet away from the railway car.

The new machine is equipped with a trailer hitch and is towable behind a car or pickup truck.

According to the manufacturer, spillover from the hopper to the conveyor trough is practically nil.

For further information write to the Sam Mulkey Co., Dept. C&E, Box 270, Lee's Summit, Mo., or use the card at page 18. Circle No. 17.

Shock absorbers offered for off-highway rigs

Heavy-duty shock absorbers for trucks and off-the-road equipment, said to have the same automatic adjustment qualities as Monro-Matic passenger-car shock absorbers, are announced by the Monroe Auto Equipment Co.

Known as Monro-Matic B-T shock absorbers, the new units utilize a 3-stage valve which, on compression and rebound, gives a smooth control of springs on paved roads and quick, positive control on rough surfaces.

For further information write to the Monroe Auto Equipment Co., Dept. C&E, 1400 E. First St., Monroe, Mich., or use the Request Card at page 18. Circle No. 96.

Tachograph identifies operator of vehicle

The Engler Instrument Co. announces a new model of the VDO tachograph.

Besides recording in chart form a permanent and accurate record for uninterrupted periods up to seven days of speed, mileage, and whether the vehicle is moving or stopped, this model will also record who was driving the vehicle at any time.

For further information write to the Engler Instrument Co., Dept. C&E, 250 Culver Ave., Jersey City 5, N. J., or use the Request Card at page 18. Circle No. 130.

WINSLOW—PORTABLE TRUCK SCALE

THE CONTRACTORS' SPECIAL SCALE

For use at temporary and permanent locations—at stock piles and by bituminous material contractors at the job site. Capacity: 15-18-20-30, 40 and 50 tons.

Write us for name of your nearest distributor.

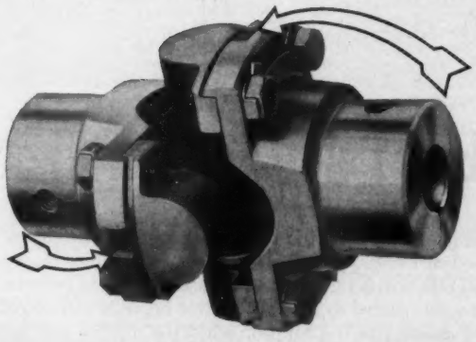
WINSLOW SCALE COMPANY

P.O. Box 1198
Terre Haute, Indiana

For more facts, use Request Card at page 18 and circle No. 352

RUGGED POWER WHEN YOU NEED IT

Because MECHANICS Roller Bearing UNIVERSAL JOINTS drive through KEYS—instead of bolts—they stand up under punishment that shears off other types of fasteners. They are designed with less parts and connections for easy assembly and servicing—smooth running balance—maximum strength with less weight—and long, trouble-free, safe operation. During the winter snows, RUGGED POWER WHEN YOU NEED IT is just one of the advantages you get when you specify MECHANICS Roller Bearing UNIVERSAL JOINTS. Let MECHANICS engineers help you design this and other competitive sales features into your product.



MECHANICS UNIVERSAL JOINT DIVISION

Borg-Warner

2030 Harrison Ave., Rockford, Ill.

Export Sales: Borg-Warner International
36 So. Wabash, Chicago 3, Illinois

MECHANICS
Roller Bearing
UNIVERSAL JOINTS

For Cars, Trucks, Tractors, Farm Implements, Road Machinery, Industrial Equipment, Aircraft

For more facts, use Request Card at page 18 and circle No. 353

A new variable-weight 3-wheel roller is announced by the Browning Mfg. Co. The unit is equipped with automotive-type power steering and steering wheel, and is available in 6 to 8, 8 to 10, and 10 to 12-ton models. Design improvements include a wide operator's platform with a safety guardrail. An exceptionally low silhouette gives the operator maximum visibility. For further information write to the **Browning Mfg. Co.**, Dept. C&E, P. O. Box 2707, San Antonio, Texas, or use the Request Card at page 18. Circle No. 139.

Tubular-steel scaffold is easily adjustable

An adjustable tubular-steel scaf fold designed so that adjustments any working height can be mad quickly by one man is announced the Marvel Equipment Corp.

It has frames 28 inches wide a 4 feet high, with an accompanyi A-Justo frame that freely telescop into the legs of the bottom unit. Th top horizontal member of the fra is hinged to the vertical legs to a sure easy telescopic movement. Th end panels do not protrude above th work platform, and even thou braces are used only on the botto frame the scaffold is always rigid.

The 2-foot adjustment can b made in 3-inch increments.

For further information write t the Marvel Equipment Corp., Dep C&E, P. O. Box 665, Oshkosh, Wis., use the Request Card at page 1 Circle No. 131.

TDM Self-Propelled Carrier has U-Bar construction which permits drilling true vertical holes on rugged terrain. Wide crawler pads and long ground contact give exceptional stability.

New device simplifies forming of beam pockets

A metal beam pocket designed t speed and simplify the forming beam pockets is introduced by Sim plex Forms Accessories, Inc.

Made of heavy-gage steel, it is ligh in weight and easy to handle. It adaptable to beam depths of 6, 8, 1 and 12 inches.

The unit consists of two compo nents, a formed metal clamp that nailed to the inside form and a pock that is easily slipped onto the clam

The Simplex metal beam pock is available in both 4 to 5-inch a 6 to 7-inch tapers.

For further information write t the Simplex Forms Accessories, In Dept. C&E, 5605 Industrial Ave Rockford, Ill., or use the Reques Card at page 18. Circle No. 132.

THE JOY 450 DUAL ROTATION DRILL

The new Joy 450 Dual Rotation Drill mounted on the sturdy Joy TDM self-propelled carrier is the modern way to mass produce blast holes economically. The 450-DR drill is the newest and fastest thing in percussion drills. A powerful air motor, geared to the chuck, gives hammer-free rotation for steel changing, and assists rifle bar rotation when the drilling gets tough. It can bottom holes that other drills can't finish—and save you money.

U-Bar feed mounting on the TDM carrier provides the most stable arrangement possible for productive drilling, and is versatile enough to drill holes at practically any angle. Fast tramming and instant response to the completely automatic controls enable the TDM to move quickly, and set up fast.

Among 4½" bore machines, the TDM mounted 450-DR drill is unbeatable in speed, power, and maneuverability. Competitive tests have proven it. For complete information, write for Bulletin 1018-21.

JOY CONSTRUCTION EQUIPMENT IS SOLD AND SERVICED BY THE JOY DISTRIBUTOR IN YOUR AREA

JOY

Joy Manufacturing Company
Oliver Building, Pittsburgh 22, Pa.

In Canada: Joy Manufacturing Company (Canada) Limited, Galt, Ontario

Portable Compressors | Trac Drills | Tungsten Carbide Rock Bits | Hand-Held Rock Drills

For more facts, use Request Card at page 18 and circle No. 354

DRILL HOLES IN HARDEST CONCRETE FASTER—EASIER!

...with the world's most effi cient masonry drill! Here's w CONCRETE-TERMITE Drills giv you faster, lower-cost drilling i any masonry:

- Up to 500% longer drill li because of CONCRETE-TER MITE's exclusive Nitrid Hardening of dust-removi worm.
- Original Multiple Carbid Cutter design mean straighter, smoother hole
- Fully-Supported Cutter protect carbides from shearing.

Start today using...

CONCRETE-TERMITE

CARBIDE-TIPPED MASONRY DRILLS

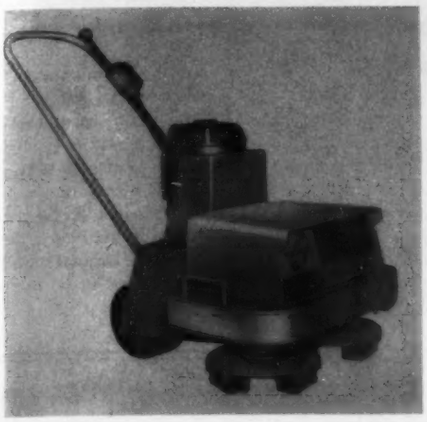
Diameters from 3/16" to 6". Interchangeable shanks available for making drills up to 36" in length. Holes without water.

Send for FREE Catalog with drill recommendation chart, and name of nearest dealer.

RELTON CORPORATION

99 N. LOTUS AVE., PASADENA, CALIF.

For more facts, circle No. 355



Designed for use on wet or dry concrete, the grinder is powered by either electric or gasoline engine.

Concrete floor grinder is heavy-duty machine

A portable concrete floor grinder said to be light enough for two men to carry, yet capable of grinding the roughest slabs, is available from the Equipment Development Co.

Two large full-floating, neoprene-mounted disks, counterrotating for smooth torque-free operation, provide almost 2 square feet of grinding area. The unit can be used on wet or dry concrete.

Power is supplied by either an electric 1½-hp fully enclosed 110/220-volt motor or a 3¾-hp 4-cycle gasoline engine. Double and single-disk models are available. All gasoline models are equipped with a centrifugal clutch for easier starting.

For further information write to the Equipment Development Co., Dept. C&E, 2700 Garfield Ave., Silver Spring, Md., or use the Request Card at page 18. Circle No. 133.

Announce new, improved tractor towing winch

A new towing winch embodying many new design features has been introduced by the Hyster Co. for mounting on Caterpillar D6 tractors and No. 977 Traxcavators.

Designated Model D6C, the unit is available in standard and Lo-Speed models.

Easier shifting and longer control cable life are insured by a constant-mesh transmission utilizing a jaw clutch engagement spring. Gear arrangement has been simplified, and all gears are cut from special alloy steel and heat-treated for long life.

A high-speed reverse cuts the time required to pull out cable. New brake and clutch levers are similar to tractor master clutch and steering clutch levers, located for easy operation.

The D6C Lo-Speed winch provides line speeds as low as 23 fpm for jobs requiring high pull and low speed. A high-speed reverse is also a feature.

Optional equipment includes a free-spooling group for converting the standard winch to one with a free-spooling drum, cable guide rolls, fairlead, and automatic brake.

For further information write to the Hyster Co., Dept. C&E, P. O. Box 328, Peoria, Ill., or use the Request Card at page 18. Circle No. 5.

HEAVY DUTY BEAUTY

Model CP-369 Concrete Saw

Another Concut "First" . . . Center Blade Mounting for perfect balance and increased efficiency. A 36 HP Unit that saws fast, straight and deep. Full Hydraulic Controls with Forward and Reverse Propelling and Power Raise Out makes the CP-369 the easiest handling heavy duty unit available. "Up-Cut" action and Blade Saver Switch increase unit efficiency and Blade Life.

BALANCED DESIGN
FULL HYDRAULIC CONTROLS
FORWARD & REVERSE DRIVE, POSITIVE BRAKING

Write or contact your Concut representative for details.

distributed in the Mid-west by . . .
CONCUT MID-AMERICA Inc., 5783 N. Lincoln Ave., Chicago 45, Ill.

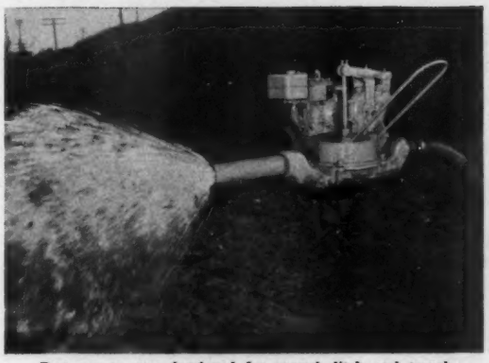
CONCUT
1845 Belcroft Ave., El Monte, Calif.

For more facts, use Request Card at page 18 and circle No. 356

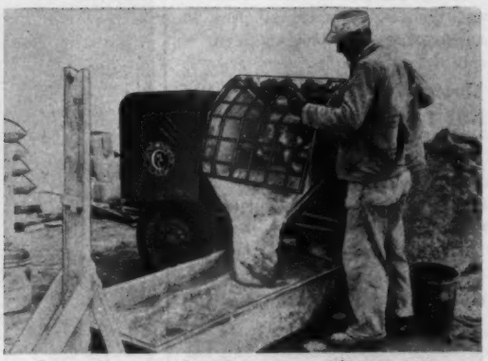
Make more money on any type pour with **CMC steel and aluminum Transcretes.** The most complete line offered by any manufacturer. 24 models. Five sizes to 7-yards mixing capacity.

You get unbeatable performance on even toughest jobs . . . and at lowest cost with **CMC Dual Prime Pumps.** All sizes from 1½" to 10" . . . capacities to 240,000 gph. Also Hi-Pressures.

CMC profit-boosters for '60



Best pumps ever developed for rugged ditch and trench pumping jobs. **CMC SKWEE OEE Diaphragms** feature vertical stroke action for longer life. Available in 2" and 3" sizes.



For speeding up work, saving many man hours on every job . . . you can't beat **CMC "WONDER" Plaster and Mortar Mixers.** Available all sizes including popular 4 cu. ft. Hoe-Boy.

Mail coupon for *FREE* literature on these CMC money-makers

CONSTRUCTION MACHINERY CO., Waterloo, Iowa

Rush new FREE literature on . . .

☐ CMC STEEL Transit Mixers ☐ CMC ALUMINUM Transit Mixers ☐ CMC Building Mixers
☐ CMC Dual Prime Pumps ☐ CMC Diaphragm Pumps ☐ CMC Hoe-Type Mixers

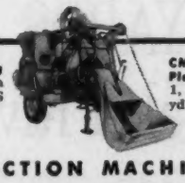
Name _____

Company _____

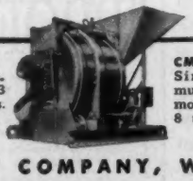
Address _____

City _____ State _____

ALSO: **CMC Building Mixers** from 3½S to 16S sizes.



CMC Central Plant Mixers. 1, 2, and 3 yd. capacities.



CMC Hoists. Single and multiple drum models from 8 to 45 H.P.

CONSTRUCTION MACHINERY COMPANY, WATERLOO, IOWA

For more facts, use coupon or Request Card at page 18 and circle No. 357

In train operation, the hoppers have a capacity of up to 28 tons when a 76,800-pound gross is allowed.

New aggregate hopper unloads while under way

An aggregate hopper for bulk-plant operation that can unload while under way is announced by the Fruehauf Trailer Co.

According to the manufacturer, the new hoppers, in train operation, allow up to one ton extra payload to aggregate haulers. They have 40×50-inch air-operated clamshell gates which are electrically operated from the cab by the driver. The gates can also be operated from the side of the trailers.

In train operation, the hoppers have a capacity of up to 28 tons when 76,800 pounds gross is allowed.

For further information write to the Fruehauf Trailer Co., Dept. C&E, 10942 Harper Ave., Detroit, Mich., or use the Request Card that is bound in at page 18 of this issue. Circle No. 13.

To obtain further information on any of the products described in this section, circle the number given at the end of the item on the handy Request Card at page 18.

Tools for servicing earthmoving equipment

A new set of hydraulically operated maintenance tools for servicing crawler tractors and earthmoving equipment is announced by the Owatonna Tool Co.

Designated No. Y-1750, the set includes pullers, attachments, and adapters to fit all types of equipment, plus 17½ and 50-ton Power-Twin hydraulic units that can be used on other hydraulic equipment as well.

Any maintenance operation requiring the removal and installation of gears, bearings, sheaves, pulleys and other tightly fitted parts can be accomplished quickly and easily with the new set, the manufacturer states.

For further information write to the Owatonna Tool Co., Dept. C&E, 381 Cedar St., Owatonna, Minn., or use the Request Card at page 18. Circle No. 137.

Electric winch-hoist has 1,500-pound capacity

A new portable electric winch and hoist capable of lifting 1,500 pounds is announced by the City Engineering Co., Inc.

Weighing only 57 pounds, the My-Te all-purpose electric hoist operates from any 30-amp, 110-volt ac circuit. It measures 27 inches long, 12 inches wide, and 14 inches high. Drum capacity is 150 feet of ¼-inch cable.

A 10-foot remote-control cable with forward and reverse action is standard.

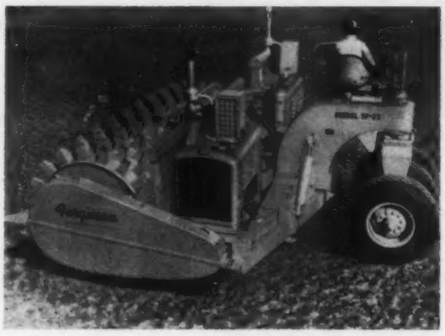
For further information write to the City Engineering Co., Inc., Dept. C&E, 3547 Massachusetts Ave., Indianapolis 18, Ind., or use the Request Card at page 18. Circle No. 68.

Stone & Webster Engineering Corporation
depends on
P&H "PROFIT·LIFTS" and "PROFIT·YARDS" on remote Baker River Project

The steady, reliable performance of P&H rigs helps Stone & Webster get cost lifts and cost yards out of the fast on many jobs. They get going those P&H "Profit-Lifts" and "Pr Yards" early in the day . . . every da

Stone & Webster gets these benefits P&H features like the P&H planetary hoist that provides positive, "inching" trol of the boom . . . MAGNETORQ the frictionless, electro-magnetic units and propel that eliminate swing ings—result in faster work cycles.

And—when the going gets extra ro they get day-in, day-out production out a hitch, because of conservative ratings and extra reserve power, str and stability.



Model SP-22 is equipped an Allison 3-speed trans-on, torque converter, and y-duty roller-chain final running in oil.

New tamping roller offers speeds to 8 mph

The Shovel Supply Co. announces the Model SP-22 self-propelled double-drum tamping roller.

The unit is equipped with drums 5 feet in diameter and 6 feet long; each drum is provided with feet 9¼ inches long.

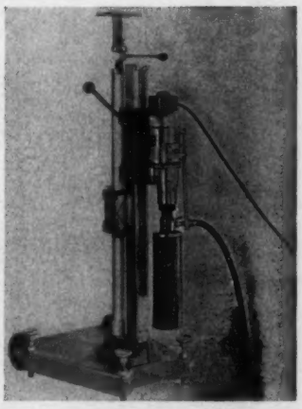
Power to each drum is supplied by a General Motors Model 4-71 125-hp diesel engine, providing speeds from 0 to 8 mph, forward and reverse. The machine is equipped with cleaners front and rear, hydraulic steering, and air brakes.

The new unit has an empty weight of 51,400 pounds; with water ballast, any desired weight up to 5,500 pounds per foot of drum length may be obtained.

For further information write to the Shovel Supply Co., Inc., Dept. C&E, P. O. Box 1369, Dallas 21, Texas, or use the Request Card at page 18. Circle No. 84.

Masonry drilling machine operates at any angle

Weighing just 175 pounds, the Kor-It Roto-Kor Model K-600 portable masonry drill uses diamond core bits to cut clean holes at high speed through reinforced concrete and other masonry materials. Powered by a uni-



versal-type electric motor, it reportedly will drill holes up to 6¼ inches in diameter at typical speeds of 1 and 2 inches deep per minute.

The swivel feature permits drilling at any angle, while the double column provides extra rigidity for drilling vertically.

Standard pipe is used as the mast, allowing economical replacement with longer lengths for "high-up" drilling.

For further information write to The Kor-It Co., Inc., Dept. C&E, 991 Richard Ave., Santa Clara, Calif., or use the Request Card at page 18. Circle No. 95.

Device probes subsurface, determine rippability

Seismic analysis, described as a quick, easy, and inexpensive method of determining if subsurface material can be ripped, has been developed by the Caterpillar Tractor Co.

Necessary equipment includes a source of the sound or shock wave (an 8-pound sledge will do), a receiver (a standard geophone), and an electronic counter. The seismograph, featuring self-contained batteries, is manufactured by the Geophysical Specialties Co. A set of tables worked out by Caterpillar completes the equipment.

For further information write to the Caterpillar Tractor Co., Dept. C&E, Peoria, Ill., or use the Request Card that is bound in at page 18 of this issue. Circle No. 87.

←For more facts, circle No. 358

gineers & nstructors: STONE & WEBSTER ENGINEERING CORPORATION

uipment: 82-ton P&H 955A Crawler Crane
2½ yd. P&H 955A-LC Dragline

oject: Baker River Project of Puget Sound Power and Light Company, 20 miles north of Concrete, Washington

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These features help all P&H owners to get some of tomorrow's work done today —which is why in the last four years, Harnischfeger sales have grown at a rate which substantially exceeds that of the industry as a whole.

For more information about P&H excavators and truck cranes of a specific size, or to set a date for a demonstration, call your P&H dealer—or drop a note to Harnischfeger Corporation, Construction & Mining Division, Milwaukee 46, Wisconsin.

HARNISCHFEGER
Milwaukee 46, Wisconsin

P&H

THE P&H LINE: Truck cranes: 12½ through 80-tons
Power shovels: ½ through 3½ yds.
Crawler cranes: 20 through 110-tons

P&H equipment is also manufactured in Australia, Brazil, Canada, Germany and Japan

Designed for faster, safer conveyor-belt adjustments, the Schrock Hydraligner is mounted on a heavy-duty steel angle frame of welded construction that is bolted directly to the conveyor frame.

Conveyor-belt adjuster uses hydraulic pressure

A conveyor-belt tension and alignment adjusting device that utilizes hydraulic pressure is available from the Western Conveyor Co.

Called the Schrock Hydraligner, the unit consists of a hydraulic cylinder attached to a bearing housing. The piston is moved by pressure applied with an ordinary grease gun, and it holds its position with pressure maintained by positive-action piston seals.

Adaptable to remote control through hydraulic lines to easily accessible stations, the device also eliminates digging or climbing for the operator who makes tension a alignment adjustments.

According to the manufacturer, Hydraligner may be adjusted while conveyor equipment is in op tion, thus providing for more per alignment. It is available in sizes from 1 15/16 through 3 inches. Standard adjustment lengths are 14, 18, 24, and 36 in

For further information write the Western Conveyor Co., Dept. P. O. Box 357, Boise, Idaho, or use Request Card bound in at page Circle No. 98.

Austin-Western Roller-Compactor combines static and vibratory force to work fines into stone base aggregates.

Austin-Western Roller-Compactors let you lay fewer courses—cut costs!

Austin-Western Roller Compactors do a deeper, faster consolidating job. They combine the advantages of both vibratory and static compaction, assuring maximum density of all types of material and profitable operation.

Vibrates up, rolls down

For vibratory compaction, three 450-lb. shoes are attached to a basic 3-wheel roller. Each shoe, hydraulically operated, vibrates approximately 2200 times per minute. This motion extends to the bottom of the lift and then reacts upward, thereby keying low-level material for maximum consolidation in the fewest number of passes. At the same time, the roller unit applies static pressure so as to effectively seal the surface.

There is more profit to be made with an Austin-Western Roller-Compactor. It operates at speeds up to 1 mph. Fewer passes are required because of its efficient double action. Fewer courses are required. It compacts lifts of stabilized material up to 12 in. in successive passes . . . no more need to remove previous courses if final tests reveal insufficient density.

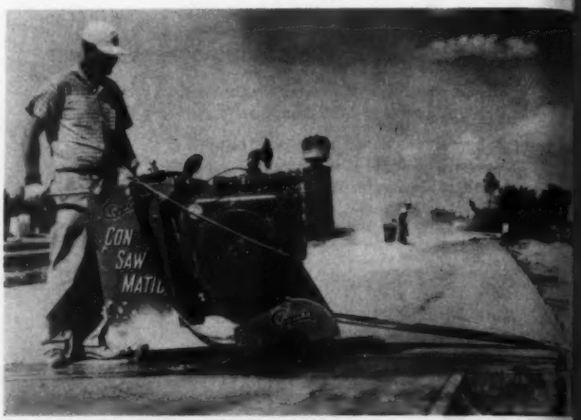
Designed for rugged service

Maintenance requirements are low. Vibratory units are sealed in oil, completely protected from dirt . . . designed for dependability under rugged service conditions. Available now for Austin-Western and most all other-makes of 3-wheel rollers. Get full information today on the cost cutting Austin-Western Roller-Compactor. See your nearby A-W distributor or write to us.

Vibratory widener attachment—for use with any 3-wheel roller equipped with A-W Roller-Compactor unit . . . may be mounted left or right.

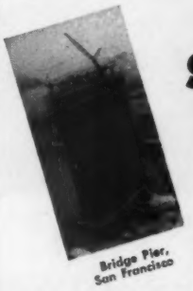
Austin Western 100th YEAR
CONSTRUCTION EQUIPMENT DIVISION, AURORA, ILL.
BALDWIN · LIMA · HAMILTON
Power graders • Motor sweepers • Road rollers • Hydraulic cranes

For more facts, use Request Card at page 18 and circle No. 359



Playing an important role in the construction of a 3½-mile segment of Interstate Highway 35, near Claycomo, Mo., the Clipper Model C-36 36-hp concrete saws are sawing all control joints, both longitudinal and transverse, in the 24-foot-wide, 8-inch-thick concrete slab. The J. A. Tobin Construction Co. of Kansas City, Kans., is using Clipper Green Con reinforced abrasive blades for sawing the new concrete. Tobin is also using the Clipper Model AC-40A hot-pour joint sealer to seal all the control joints. The AC-40A seals up to 4 miles of joints per day, and combines the melting and pressure sealing unit in one compact kettle. For further information write to the **Clipper Mfg. Co.**, Dept. C&E, Suite 102, 2800 Warwick, Kansas City, Mo., or use Request Card at page 18. Circle No. 60.

HYDRAULIC SLIPFORM SERVICE



Bridge Pier, San Francisco

All-inclusive compact jacking unit

Water Tower, Tyler, Texas

Apt. House, Memphis, Tenn.

You build the form, "Concretor" equipment raises it automatically. Adaptable to all types of vertical construction. On-the-job engineers available. Send for job studies.

Elevator, Fremont, Nebr.

B. M. HEEDE, INC., 30-01 37th Ave., Long Island City 1, N. Y.
In San Francisco: 630 Sixth St. In Montreal, Can.: 625 Faillon St.

For more facts, use Request Card at page 18 and circle No. 360

Designed primarily for stockpile work, the RL-400 has a 3,000-pound lifting capacity to full height.

Reverse-mounted loader has self-loading bucket

A new reverse-mounted loader, the RL-400 Series, is offered by the Henry Mfg. Co., Inc.

Designed primarily for stockpile work, the machine features a 1-yard self-loading bucket. This bucket is loaded by hydraulic power, and does not depend on the traction of the tractor. A specially designed control valve enables the bucket to self-level.

The RL-400 is designed to mount on utility tractors, and has a lifting capacity of 3,000 pounds to full height. Breakaway capacity is 4,500 pounds.

For further information write to the Henry Mfg. Co., Inc., Dept. C&E, P.O. Box 521, Topeka, Kans., or use the Request Card at page 18. Circle No. 4.

Self-propelled tamper gives high compaction

The Model T-1848 self-contained, self-propelled tamper is offered by the Tel-Go Mfg. Corp.

Powered by a Wisconsin Model BKN air-cooled 6-hp engine, the unit travels at speeds up to 80 fpm. Exerting a 7,500-pound force, with the adjustable hand throttle, it compacts at a rate of 1,800 to 2,500 blows per minute.

The 352-pound machine requires but a single operator.

For further information write to the Tel-Go Mfg. Corp., Inc., Dept. C&E, P. O. Box 8734, Houston 9, Texas, or use the Request Card at page 18. Circle No. 136.

CURE CONCRETE IN THREE DAYS!

Now! Cut curing time a full week . . . use FULCO CURING MATS! They use less water . . . stay wetter longer . . . increase compressive strength of concrete . . . insulate against severe temperature changes . . . produce a more uniform job! Fulco Cotton and Burlap curing mats may be re-used again and again. Write for complete information and prices.

FULTEX® AND SHUREDRY® TARPS
FOR EVERY CONSTRUCTION JOB.
Buy direct from Fulton and save. Standard sizes and weights in stock for shipment—or made to your specifications. Also nylon tarps. Write for prices.

Fulton
COTTON MILLS

P. O. Box 1726, Atlanta 1, Georgia
Telephone MUrray 8-1111 TWX: AT 24

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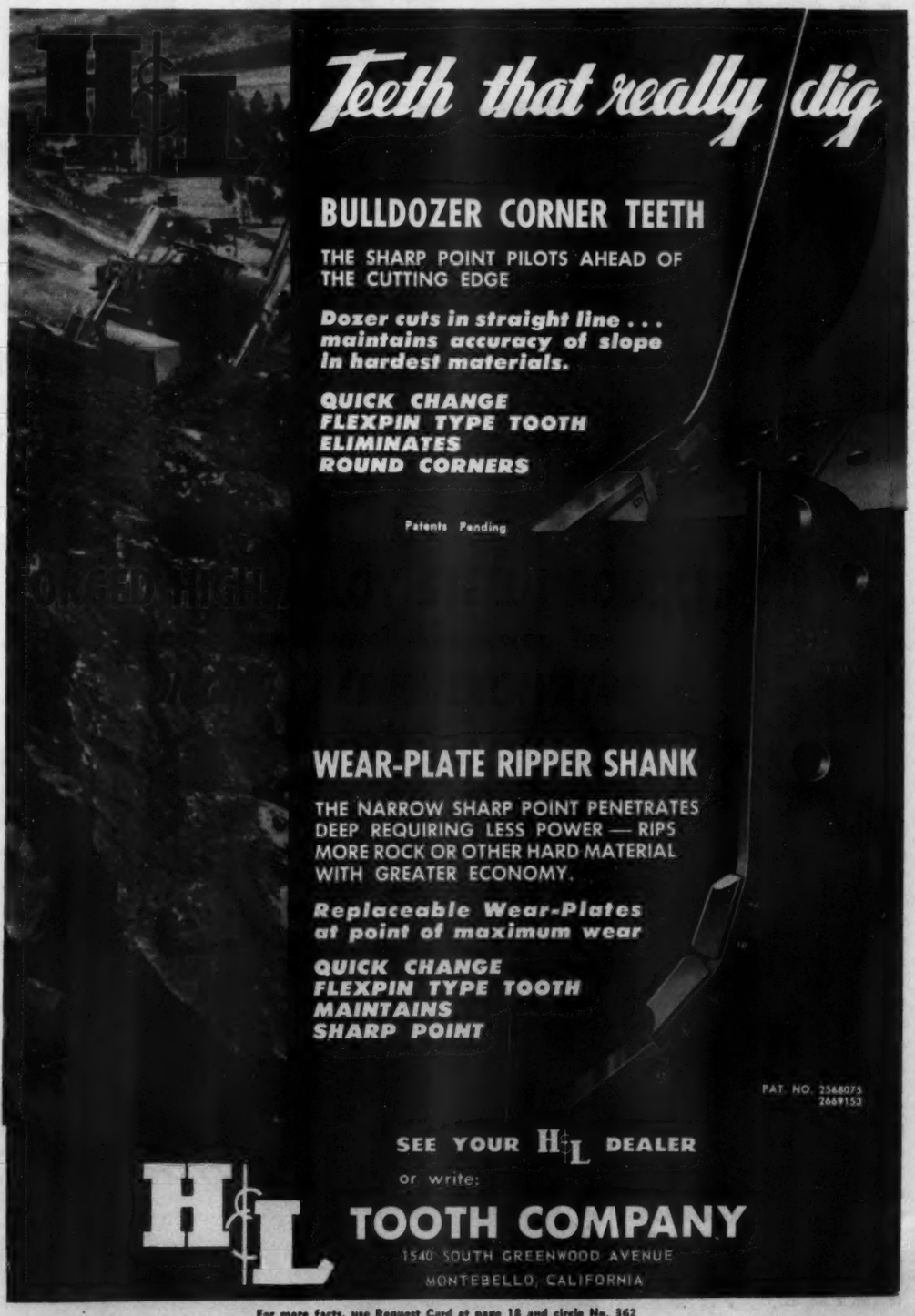
Teeth that really dig
BULLDOZER CORNER TEETH
THE SHARP POINT PILOTS AHEAD OF THE CUTTING EDGE
Dozer cuts in straight line . . . maintains accuracy of slope in hardest materials.
QUICK CHANGE FLEXPIN TYPE TOOTH ELIMINATES ROUND CORNERS
Patents Pending
WEAR-PLATE RIPPER SHANK
THE NARROW SHARP POINT PENETRATES DEEP REQUIRING LESS POWER — RIPS MORE ROCK OR OTHER HARD MATERIAL WITH GREATER ECONOMY.
Replaceable Wear-Plates at point of maximum wear
QUICK CHANGE FLEXPIN TYPE TOOTH MAINTAINS SHARP POINT
PAT. NO. 2568075 2669153
SEE YOUR H&L DEALER
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H&L TOOTH COMPANY
1540 SOUTH GREENWOOD AVENUE
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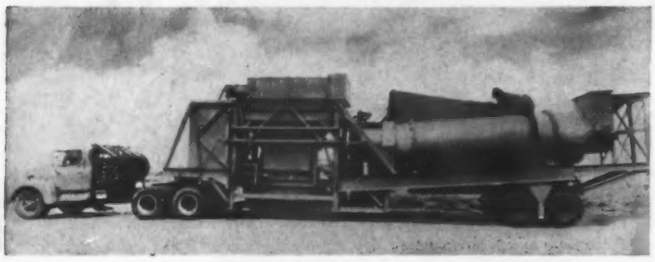
For more facts, use Request Card at page 18 and circle No. 362



A built-in power hoist automatically raises the mixing unit from transport to operating position in less than 30 minutes.

Portable asphalt plant offers 1½-ton batch

A new, completely portable 3,000-pound-batch-capacity asphalt plant is available from the Standard Steel Corp.

The entire Model TM-3000 portable drying and mixing unit is self-contained in its own trailer frame. According to the manufacturer, it can be set up and in production within eight hours.

Production capacity is said to be as high as 120 tph. Other major features include Simplex push-button batching control; positive control of [illegible] asphalt; complete accessibility [illegible] mixer and other equipment; and [illegible] completely portable dust-collect[illegible] unit.

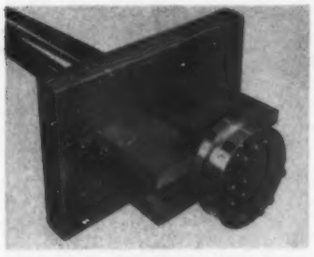
The new plant is also available [illegible] 1,000, 1,500, and 2,000-pound [illegible] capacities.

For further information write [illegible] the Standard Steel Corp., Dept. C[illegible] P. O. Box 58252, Los Angeles [illegible] Calif., or use the Request Card [illegible] page 18. Circle No. 22.

New stressing washer for post-tensioning setup

A new design of the stressing washer used in the Prescon system of post-tensioning prestressed concrete is announced by The Prescon Corp.

The threads on the old style have been replaced by one groove which means faster and easier attachment of the collar and pull rod of the hydraulic jack. Elimination of threads on the washer reduces the possibility of damage by rough handling and simplifies collar attachment.



For further information write to The Prescon Corp., Dept. C&E, P. O. Box 4186, Corpus Christi, Texas, or use the Request Card at page 18. Circle No. 155.

New forming method for contraction joints

A new method of forming contraction joints in portland-cement concrete pavement is announced by the American Sisalkraft Corp.

The Sisalkraft joint former is made of high-impact vinyl plastic and consists of two parts — a tee spreader strip and a "V" envelope. Together, they are inserted into newly placed concrete under high-frequency, low-amplitude vibration by a self-propelled vibrating machine that rides the forms. To remove, the spreader strip is taken out first, collapsing the envelope for easy removal from the concrete. The result is an accurate joint of non-varying dimension.

According to the manufacturer, the joint former is easy to handle and can be re-used many times. The plastic strips are available in both 2 and 3-inch widths to meet both highway and airfield specifications.

For further information write to the American Sisalkraft Corp., Dept. TK, Dept. C&E, 55 Starkey Ave., Attleboro, Mass., or use the Request Card at page 18. Circle No. 81.

ALL NEW OLIVER OC-9

—the tractor that TALKS for itself!

with TRANSOMATIC drive to give you 3 types of turns...fully "powerized" operation!

Wait until you see the size of the *ideas* in this totally modern tractor!

The OC-9 is *all new*, years ahead of anything else its size! It's far advanced in *every* department—in new diesel might with power-boosting torque converter drive...in the easiest operating performance you've ever enjoyed in a tractor.

Being *all* newly engineered and not an updated older model, the OC-9 is designed *in all its components* for more than the full power it packs...for the greater work it can do. In size, weight and strength of torque converter, transmission, clutches, track assembly—*all* vital working parts—the OC-9 is the most massive in its class...the most lasting.

See the progress that has come to tractor design...the profit-multiplying benefits ready for you now!

Typical of the new series of "job-planned" truck bodies being manufactured by Reading Body Works, Inc., is this ¾-ton service and utility unit. The new bodies have radius corners at the top of compartments, as well as other structural reinforcement features. For further information write to **Reading Body Works, Inc.**, Dept. C&E, 420 Gregg Ave., Reading, Pa., or use the Request Card at page 18. Circle No. 39.

For more facts on these products, circle the indicated number on the Request Card at page 18.

Diesel-electric hauler has 55-ton capacity

The Unit Rig & Equipment Co. announces a new 55-ton-capacity diesel-electric truck for large-scale construction operations.

The off-highway vehicle incorporates the General Electric motorized wheel drive. Electric power for the wheels is supplied from a generator driven by a Cummins VT-12 engine. Each wheel has its own integral electric motor and simple gear drive arrangement. The entire motor is mounted within the rim, which in turn is bolted to the side of the vehicle. According to the manufacturer, the truck can take grades up to 15 per cent.

Dynamic braking on all four wheels, utilizing the full horsepower capacity of the wheel motors as generators, is another important feature.

Through hydraulic power steering, the width required for a 180-degree turn is 50 feet.

For further information write to the Unit Rig & Equipment Co., Dept. C&E, P. O. Box 1889, Tulsa 1, Okla., or use the Request Card that is bound in at page 18 of this issue. Circle No. 65.

New road-grader tire made to wear longer

A new road-grader tire with improved traction and wear characteristics has been introduced by the B. F. Goodrich Tire Co.

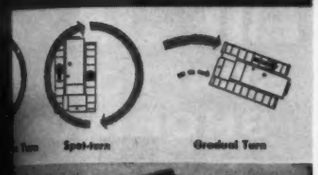
Called Power Grader, it has an all-nylon cord body that withstands double the shock of ordinary grader tires, according to the manufacturer. Extra-large tapered cleats that dig into the soil prevent slippage, and its open center tread design promotes better cleaning.

A new design with wider heel-to-heel measurement at the beads makes the tire easier to mount and demount.

The Power Grader is available in sizes 9.00×24 through 18.00×26 with ply ratings from 6 to 14. A smooth-tread-model tire is made in size 13.00×24 for use on freshly worked macadam roads.

For further information write to the B. F. Goodrich Tire Co., Dept. C&E, 500 S. Main St., Akron 18, Ohio, or use the Request Card at page 18. Circle No. 77.

←For more facts, circle No. 363



Turn Spot-turn Gradual Turn

NEW SELECTIVE POWER STEERING
For the first time in a tractor this size, *independent* power to each track gives you three types of *power* turns —for exactly the maneuver the job and conditions call for: counter-rotation turn, spot-turn and gradual turn.

NEW POWER SHIFTING
Shift forward to reverse instantly. No clutching, no gear-clashing, no letup in production! Four speeds forward to 5.94 m.p.h....fastest of all speeds backwards to 7.92 m.p.h.

NEW TORQUE CONVERTER
The OC-9 is the *first* crawler its size having an *industrial heavy-duty* torque converter built far in excess of the toughest work-load requirements. Push or pull twice the pay loads at reduced speeds...profit from its limitless speed ratios to match any job needs.

NEW MASSIVE WORK POWER
Longest and heaviest in its class, the OC-9 delivers the greatest drawbar pounds pull of any tractor its size. Advanced 62 gross h.p. diesel proves its design superiority with higher horsepower per pound...unmatched fuel economy.

NEW OPERATING EASE AND COMFORT
The OC-9's "lap of luxury" controls put easy, relaxed steering and reverse comfortably in hand with conveniently placed, power-assisted controls just ahead of the operator's seat. Only the OC-9 has full-width, flush deck for walk-in ease and leg-movement freedom.

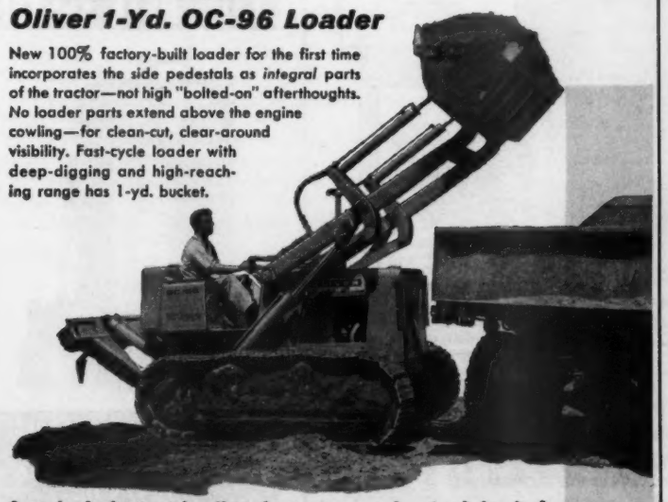
NEW FUNCTIONAL DESIGN
Take a good look at the OC-9's clean, uncluttered good looks. Here is the classic of crawler-engineering with design simplicity and *design sense* sure to enhance your company prestige on every job you give it.

See what's ahead for you in newly achieved job speed—higher-than-ever earnings...

lam-bang test the OC-9 in your own way and let the tractor do the talking"

Also All New Oliver 1-Yd. OC-96 Loader

New 100% factory-built loader for the first time incorporates the side pedestals as *integral* parts of the tractor—not high "bolted-on" afterthoughts. No loader parts extend above the engine cowling—for clean-cut, clear-around visibility. Fast-cycle loader with deep-digging and high-reaching range has 1-yd. bucket.



America's fastest loading, fastest reversing 1-yd. loader!

OLIVER **THE OLIVER CORPORATION**
Dept. 2232, 400 W. Madison St., Chicago 6, Ill.
LOOK TO OLIVER FOR YOUR BEST BUY IN WHEEL AND CRAWLER TRACTORS

MOVE INTO THE NEW ERA OF TRACTOR PERFORMANCE
Call your Oliver dealer now for details and demonstration! Or write for brand-new, highly illustrated catalog.

The Buschmaster can be used for building and maintaining roads in rugged forest terrain.

Vehicle handles road work in tough forest terrain

A versatile vehicle that can be used in building and maintaining roads and for earthmoving is announced by Gar Wood Industries, Inc.

Known as the Buschmaster, it is especially designed to work in rugged forest terrain. This rubber-tire vehicle's equipment includes an hydraulically operated bulldozer blade and grading blade, and a winch. A drawbar enables the Buschmaster to handle scrapers and other similar attachments.

Equipped with a 100-hp diesel engine, torque converter, 4-wheel drive, and hydraulic steering, the machine offers speeds up to 25 mph.

For further information write to Gar Wood Industries, Inc., Dept. C&E, 36253 Michigan Ave., Wayne, Mich., or use the Request Card at page 18. Circle No. 47.

For further information on any product described in this section circle the indicated number on the Request Card at page 18.

Coating for steel forms permits clean stripping

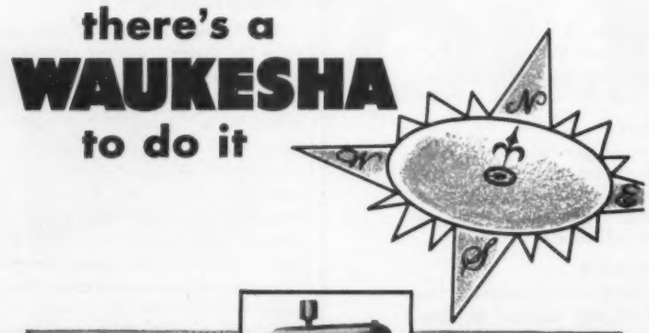
A coating for steel concrete forms that allows the user to strip forms cleanly, regardless of the mix or type of concrete used, is available from Brad Chemical, Inc.

Called Uni-Form, it comes ready mixed and ready for use. It is low in viscosity and can be readily applied with mechanical or hand sprayers, or can be brushed or mopped on.

According to the manufacturer, the coating will not freeze, and can be stored indefinitely. Despite its lack of viscosity, it can be applied to forms while they are erected, and is said not to run and accumulate at the bottom of the form.

For further information write to Brad Chemical, Inc., Dept. C&E, 111 W. Washington St., Chicago 2, Ill., or use the Request Card at page 18. Circle No. 78.

Whatever the job
wherever it is . . .
there's a
WAUKESHA
to do it

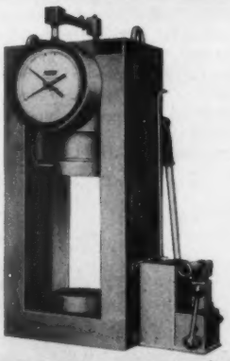


For service—in any country—or any climate—stamina and dependability are *built-in*. Power packed—to pay profits in fast, smooth performance, fuel economy, and low upkeep—Waukeshas are the choice of operators and contractor-owners alike. Find out *why* from your Waukesha distributor.

WAUKESHA MOTOR COMPANY, WAUKESHA, WISCONSIN
NEW YORK TULSA LOS ANGELES
Factories—Waukesha, Wisconsin, and Clinton, Iowa 457

For more facts, use Request Card at page 18 and circle No. 364

MODEL FT 20
JOBSITE
CONCRETE TESTER



FOR: CYLINDERS, CORES, BLOCKS, BEAMS, CUBES, BRICK AND DRAIN TILE
FORNEY'S INC.
TESTER DIVISION
BOX 310, NEW CASTLE, PA., U.S.A.

For more facts, circle No. 365

BIL-JAX
SCAFFOLD
SHORING

SPEEDS
HIGHWAY
CONSTRUCTION

BUY
or
RENT

Cross Westchester Freeway
right on schedule . . . . .

Building 10 bridges, one viaduct, three culverts, Bil-Jax scaffold-shoring comes in handy and is used on job after job by Mount Vernon Contracting Corporation in keeping "right on schedule" with the last section of the 35 million dollar expressway in Westchester County, N.Y. On the bridge shown, 1100 feet long, 7 lanes wide, Bil-Jax is used to align each column and support the beams.

Sales and rental outlets throughout U.S. and Canada. Write for catalog.

★Our engineers gladly furnish layouts and estimates for scaffold-shoring jobs large or small. Ask for copy of Shoring Manual.

BIL-JAX
Archbold, Ohio

For more facts, circle No. 366

The new Gardner-Denver compressor is said to increase capacity 15 per cent for more fuel economy.

Portable air compressor has increased capacity

The new Gardner-Denver 125-cfm rotary portable air compressor features a 15 per cent increase in horsepower capacity.

An automatic water-circulating system insures that the compressor and engine operate at a constant temperature, despite temperature changes. It is protected from "dry starts" in cold weather by a finger-tip hydroshift clutch that disengages the compressor. This allows the engine to start freely, and water circulating through the system warms compressor oil, assuring full oil flow when the clutch is engaged to start the compressor.

Only in cold weather is it necessary to disengage the clutch. Under normal conditions, the clutch serves as a flexible coupling and safety feature between compressor and engine.

According to the manufacturer, the rotary delivers a steady supply of compressed air without pulsations and vibration.

For further information write to the Gardner-Denver Co., Dept. C&E, 5. Front St., Quincy, Ill., or use the Request Card at page 18. Circle No. 37.

Self-leveling level saves up to 50% surveying time

The Ertel Level, proved successful throughout the United States, automatically assumes a truly horizontal line of sight once it has been approximately leveled by its circular bubble. The self-leveling system consists of two carefully-positioned prisms which are moved by a gravity-operated pendulum to a precise realignment with any accidental change of instrument sighting—such as one tripod leg sinking into soft soil. *During extensive leveling operations, the instrument cuts working time as much as 50%.* The Ertel INA Level—made in West Germany—is 5½" high; has a 30x telescope; weighs 19¼ lbs. (including tripod). Write for Bulletin INA which gives complete data.

PRECISION INSTRUMENTS INC.
[illegible] FIFTH AVENUE, TROY, NEW YORK

For more facts, circle No. 367

TOP QUALITY REPLACEMENT PARTS FOR CRAWLER TRACTORS

TRACK & TOP & LOWER ROLLER ASSEMBLIES, LINKS, PINS AND BUSHINGS

SCHNACKE MFG. CORP.

1016 E. Columbia St. Ph. HA 5-5186
Evansville 7, Indiana

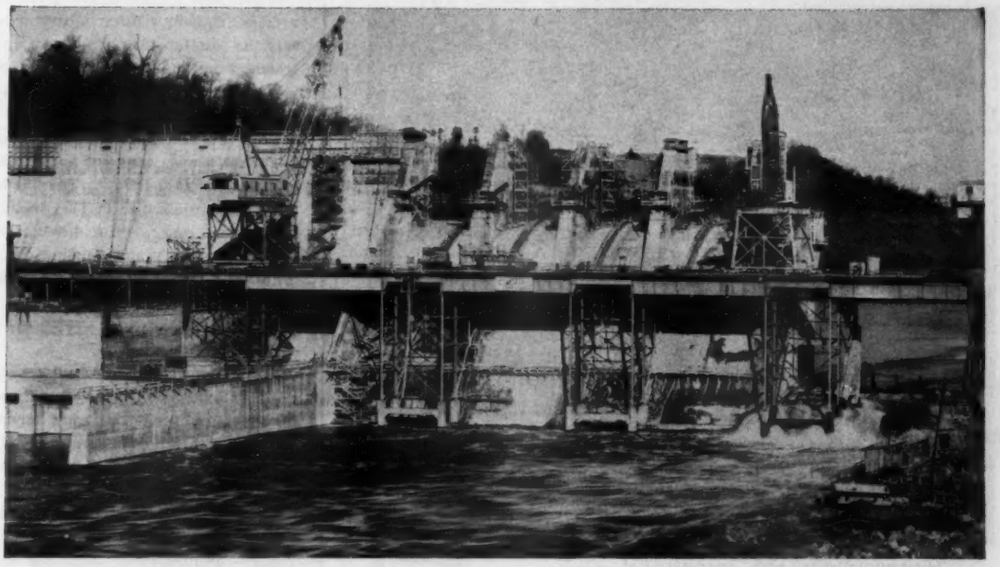
Manufactured in U.S.A. with American "Know-How"

TRACK REPLACEMENTS AND PARTS FOR CATERPILLAR, INTERNATIONAL, ALLIS-CHALMERS

Warehouses from Coast to Coast Write for Nearest Dealer

(OWNED & OPERATED BY SOUTHERN TRACTOR PARTS CORP.)

For more facts, use Request Card at page 18 and circle No. 368



Clyde Whirley No. CW-3264 on Douglas Dam job. Also shown is No. CW-3266, now in use at Widows Creek Steam Plant near Stevenson, Ala.

Performance record of Crane No. CW-3264 shows why

Clyde Whirleys are best for dam construction

The severest appraisal of value of a machine is its record of performance . . . its use and re-use on work for which it has been engineered. Continued re-use over many years writes a record of longevity of useful and profitable service such as this record of Clyde Whirley No. CW-3264:

1940 Received new at Cherokee Dam near Jefferson City, Tenn.

1942 Douglas Dam near Dandridge, Tenn.

1943 Fontana Dam near Bryson City, N. C.

1946 Sold. Used at Davis Dam near Kingsman, Ariz.

1950 Re-purchased by original owner. Used at Boone Dam near Elizabethton, Tenn.

1952 Fort Patrick Henry Dam near Kingsport, Tenn.

1953 Gallatin Steam Plant near Gallatin, Tenn. through 1959.

1960 Colbert Steam Plant near Tuscumbia, Ala.

Pre-World War II and into the 'sixties'! Repurchased by the original owner! What better recommendation for the quality engineering and rugged and dependable construction of Clyde Whirleys . . . or any other material handling equipment that bears the Clyde trademark?

Clyde Whirley No. CW-3264 at work on the Gallatin Steam Plant. Boom length has been increased to 167'. Gantry has been increased to 62' and will be increased to 95' for Colbert Steam Plant job. Hoist motor size has not been increased.

. . . and No. CW-3264 is still in the prime of its youth!

CLYDE IRON WORKS, Inc.

Established 1899
DULUTH 1, MINNESOTA

A SUBSIDIARY OF RIC REPUBLIC INDUSTRIAL CORPORATION

HOISTS • DERRICKS • WHIRLEYS • BUILDERS TOWERS • UNLOADERS • CAR PULLERS • ROLLERS

For more facts, use Request Card at page 18 and circle No. 369

The Campbell Sliding Cab - - -
for models HU, HH, HO, H30R, H50, H70, and H90
"Payloaders"!!!

This sturdy, modern design offers features long desired by "PAYLOADER" operators, among them—Sliding top, ball bearing mounted on steel channel—Rubber seals to insure weather tightness—Permanently mounted access ladder—Rear view mirror—Tinted safety glass windshield and skylight.

Investigate this completely new design in "Payloader" Cabs by calling your "Payloader" distributor, or contact

CAMPBELL DETACHABLE CAB CO.
WAUCONDA, ILLINOIS

For more facts, use Request Card at page 18 and circle No. 370

"Best investment we ever made," says contractor of this trailer-mounted Malsbary HPC cleaning system.

Take grief out of equipment cleaning with
Malsbary HPC Cleaning System

Here's the speediest, most efficient system on the market for cleaning equipment, parts, etc. — the all-in-one compact, multi-purpose package. Whether your cleaning involves layers of greasy dirt that cause engine overheating . . . heavy, abrasive grime . . . ice and frozen mud . . . dirty parts that slow mechanics . . . degassing tanks for new cargoes or welding repairs . . . too much downtime for cleaning — you'll find the Malsbary HPC system a quick, money-making solution to your equipment cleaning problems.

Key to fast, effective cleaning is the heat, pressure and volume delivered by the Malsbary HPC system. You get:

Hot solution at thermal-hydraulic pressures 2 to 4 times greater than any steam cleaner . . . hot or cold water at a dirt-blasting 300-400 psi . . . gentle rinse or wash water . . . wet steam for degassing and heating . . . and greatest time saver of all, hot solution and cold water, or wet steam and cold water, simultaneously from 2 to 4 guns.

More than 6000 in use. See for yourself how the Malsbary HPC system breezes through the toughest cleaning jobs. Ask your Malsbary dealer about 10-day buy-and-try plan . . . see phone book yellow pages or write us, outlining your cleaning problems.

137

ASK ABOUT the Malsbary green steam cleaner hose . . . it's durable, oil and abrasion resistant.

MALSBARY SINCE 1921 MANUFACTURING CO.
845 92nd Ave., Oakland 3, Calif.

For more facts, use Request Card at page 18 and circle No. 371

The blade on the International T-340 hydraulic bullgrader is 85¼ inches wi and reinforced for a wide variety of high-capacity earthmoving jobs.

New hydraulic bullgrader for crawler-tractor

A hydraulic bullgrader, 85¼ inches wide and heavily reinforced for high-capacity earthmoving, has been introduced by the International Harvester Co. for use with the International T-340 crawler-tractor.

Only two control levers are needed to deliver a wide range of angle, tilt, and height adjustments. The blade can be set to a depth of 11¾ inches below grade, and raised to a height of 35 inches above grade. Angling positions vary from 25 degrees right to 25 degrees left. Either end of the bl can be raised or lowered as mu 15 inches.

Dozer side-booms are located side the tracks to provide ma support, and to allow working banks. A 6-inch-high cutting e reversible.

For further information wri the International Harvester Co., D C&E, 180 N. Michigan Ave., Chi Ill., or use the Request Card at p 18. Circle No. 140.

Automatic heat control on new space heater

An automatic heat-control kit is now available as optional equipment on the Master Vibrator Co.'s Model B-125 portable heater. The kit contains a thermostat and an automatic fan cutoff switch.

When the desired temperature is reached, the thermostat — set in advance — automatically turns off the fuel and ignition. At the same time, the automatic fan cutoff switch allows the fan to run until it has cooled the combustion chamber, and then turns off the fan. This pro the life of the motor and pump, electricity, and keeps the heater blowing cool air.

The Model B-125 produces 12 Btu of circulated heat per hour. powered by 115-volt 60-cycle ac tricity, and it runs on kerosene, o No. 1 or No. 2 fuel oil.

For further information write to Master Vibrator Co., Dept. C&E, 1 Stanley Ave., Dayton, Ohio, or use card at page 18. Circle No. 82.

TRIAL SAMPLES
Of World-Famous WHITMORE'S Lubrican
NOW IN AEROSOL SPRAY-ON CANS!

HANDI-LUBE LIQUID GEAR COMPOSITION
For open gears, sliding surfaces—exclusive formulas eliminate metal to metal contact, keep wear on the lubricant not the metal —no breakdown even after prolonged use under water—available for every climatic condition—packaged in handy 16-oz. aerosol spray-on containers or in bulk containers—send for a free trial sample.

WIRE ROPE SPRAY LUBRICANT
Exclusive formulas for lubricating and protecting wire rope, chain, springs. Penetrates to the core of wire rope minimizing internal friction and increasing usable life up to 300% —special protective qualities absolutely eliminate corrosion—non-gumming qualities reduce "carry-back"—packaged in handy 16 oz. aerosol spray-on containers or in bulk containers—send for a free trial sample.

65 YEARS OF LEADERSHIP LUBRICATING THE FOLLOWING:
• Open Gears, Dipper Sticks, Cams • Enclosed Gear Cases • Wire Rope and Cable
• Hydraulic Units, Torque Converters • Roller, Ball, and Sleeve Bearings • Speed Reducers

Est. 1893
THE WHITMORE MANUFACTURING CO.
LUBRICATING ENGINEERS
CLEVELAND 4, OHIO, U.S.A. PHONE: VULCAN 3-7273

For more facts, use Request Card at page 18 and circle No. 372

A pre-mix concrete batching plant assembled or disassembled in only one day saved a repeating 50 per cent of time and erection costs on Indiana state highway widening projects for the Montpelier Stone Co. From a location on Route 3, south of Rushville, where it supplied 6,700 cubic yards of concrete for 11 miles of widening, the plant—a Noble Batch-a-bout—was disassembled in one day and moved to Route 5 north of Warren, for an additional 6,100 cubic yards, or 10 miles, of highway concrete. Operating 9 to 10 hours a day, the plant batched an average of 60 yards per hour of pre-mix concrete with plant output governed by required mixing time and capacity. For further information write to the **Noble Co.**, Dept. C&E, 1860 Seventh St., Oakland, Calif., or use the Request Card at page 18. Circle No. 71.

For more data on any item, circle indicated number on card at page 18.

New links simplify dragline chain repairs

The V-slot design of Page Kwik-Weld links is said to permit repairs of any dragline chain.

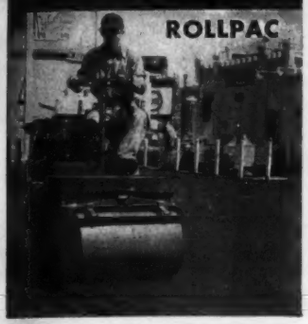
These units are available in end links, pear-shaped end links, ring, and center repair links. The thin section of the link is easily cut, removed, and hooked into the chain. Placing the lug back into place and welding with a low-hydrogen rod provides a permanent chain repair without rivets, bolts, or pins. The smooth repair link is at least as strong as the original unit, according to the manufacturer.

Links are available for all standard chain sizes.

For further information write to the Page Engineering Co., Dept. C&E, Clearing Post Office, Chicago 38, Ill., or use the Request Card at page 18. Circle No. 141.

YOU CAN'T OUTGROW A ROLCOR ROLLER

STATIC OR VIBRATORY



Whether your job is . . .
Crease rolling . . . Driveways . . . Parking lots . . . Patching . . . Tennis courts . . . Sod rolling . . . Maintenance . . . you won't outgrow the usefulness of a Rollpac.
That's why thousands of contractors, landscapers, institutions and others make Rollpac their "number one" unit. One week on *your* job will prove to you why Rollpac is the top selling one-ton roller in the United States.

Here's a two-ton vibratory roller that produces compaction to equal or exceed static rollers weighing eight tons! Vibrapac is 100% American designed and built specifically for asphalt and soil compaction—no corrugation of surfaces. A single lever clutch shifts from static to vibratory action. Works in close places.

Easy to transport with Rolcor Trailer.

WRITE FOR FULL INFORMATION AND LITERATURE

ROSCO MANUFACTURING CO.
ROLCOR DIVISION
3118 Snelling Ave. • Minneapolis 6, Minn.

For more facts, circle No. 373

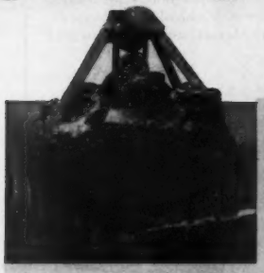
WET JOB?
whether
POWER PLANT

or other wet work—
for "quick dry"...specify...

GRIFFIN
WELLPOINT CORP.
SALES • RENTAL • CONTRACT
881 E. 141st St., New York 54, N. Y.
Hammond, Ind. • Jacksonville, Fla.
Houston, Tex. • W. Palm Bch., Fla.

For more facts, circle No. 374

OWEN BUCKETS

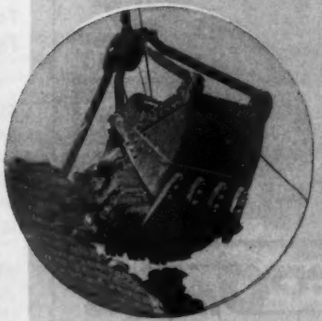


THE GIANT OF THEM ALL

The following five combined features make OWEN the big giant performer . . . for any type of clamshell work . . . for any model or make of crane.

1. Block and Tackle Type Reeving
2. One-Piece Head Construction
3. Riveted Bowl Assembly
4. Single Main Shaft
5. Recessed Lips

Added to these construction features are more than fifty years experience in the manufacturing of clamshells . . . and nothing else! For any job that requires a clamshell, there is an Owen to fill the bill . . . backed by proven construction design and over one-half century of experience.

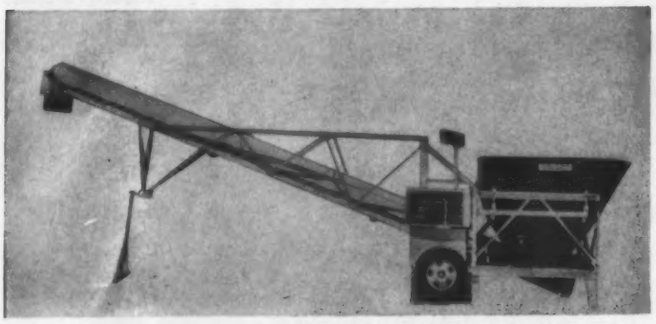


Put the Giant on your crane — OWEN — and know the work will be done faster, better and more economically.

Write today for any specific or additional information

The OWEN BUCKET Co.
BREAKWATER AVENUE, CLEVELAND 2, OHIO
BRANCHES: New York • Philadelphia • Chicago
Berkeley, Calif. • Fort Lauderdale, Fla.

For more facts, use Request Card at page 18 and circle No. 375



Now available in 4 and 6-yard models, the Challenge Runabout portable batch plant can be operated by one man.

Portable batch plant now made in two sizes

The Cook Bros. Equipment Co. now offers the Challenge Runabout portable batch plant in two sizes. A 4-yard Runabout batches up to 35 cubic yards per hour, and a 6-yard model batches up to 45 cubic yards per hour.

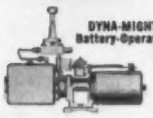
The mixer charging height on both the 4 and 6-yard models is 11 feet 6 inches with gear at ground level, and will accommodate any size mixer. The conveyor boom has a removable canvas cover to minimize dusting, and is equipped with a rubber charging hood and material and provides overhead loading of the truck mixer. Hinged design allows direct mixer charging from the belt whenever desired.

For further information write to the Cook Bros. Equipment Co., Dept. C&E, 3334 San Fernando Road, Los Angeles 65, Calif., or use the Request Card at page 18. Circle No. 58.

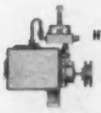
LIFT-LOWER SNOW PLOWS IN SECONDS

MONARCH

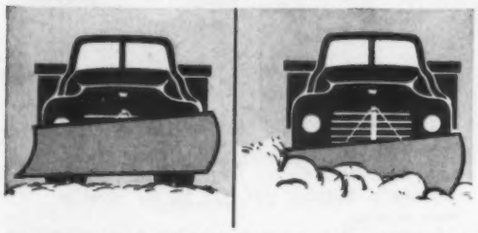
POWER HYDRAULIC CONTROLS



One man controls the plow from the cab . . . instant up-and-down action with the flick of a wrist. Snow removal is easier, faster, more economical with Monarch. See your dealer or write for illustrated folder.



HY-LO for Jeep Fan-Belt Driven



MONARCH ROAD MACHINERY COMPANY

1331 Michigan St., N. E. — Grand Rapids 3, Michigan

For more facts, circle No. 376

Torque-converter version of scraper is announced

Two transmissions for the Model D Tournapull — a torque-converter or conventional manual shift-type transmission — are available from the LeTourneau-Westinghouse Co.

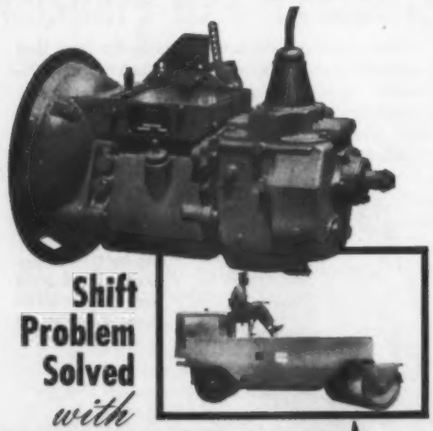
The new torque-converter version of the prime mover can be had with any of the standard "D" size interchangeable trailing tools, including the 9-yard scraper, 11-ton rear-dump, or 10-ton mobile crane.

Some rearrangement of components is involved although most critical dimensions remain unchanged. The unit maintains its GM 143-hp diesel engine.

The new transmission consists of a single-stage, multiple-phase, 4-element torque converter combined with a heavy-duty power-shift gear box. Four forward and two reverse ranges provide the equivalent of an infinite number of gear ratios with speeds up to 30 mph.

A feature that is standard equipment on the D Tournapull with Allison transmission is an automatic lockup clutch said to eliminate power-consuming slippage in the converter at haul speeds.

For further information write to the LeTourneau-Westinghouse Co., Dept. C&E, 2301 N. Adams St., Peoria, Ill., or use the Request Card at page 18. Circle No. 88.



On this Browning Road Roller, a FUNK Revers-O-Matic allows the operator to change both speed and direction — *with just one lever.* Shifting is smooth and instant, with no wheel spinning.

Look for FUNK Revers-O-Matic Drive and other FUNK components on the equipment you buy.

FUNK MFG. CO. BOX 577-B COFFEYVILLE, KANSAS

For more facts, circle No. 377

Formation-type rock bit for blast-hole drilling

The Varel Mfg. Co. has available a new formation-type rock bit for blast-hole drilling in quarrying operations where fast penetration rates are necessary but where excessive gage wear has been a problem. The unit is designated Model VH3T.

According to the manufacturer, the bit is designed with each cone's tooth-cutter arrangement balanced in relation to the other cones. This assures long bearing life and even bearing wear on all three cones while providing an optimum bottom-hole cutting pattern for faster drilling.

For further information write to the Varel Mfg. Co., Dept. C&E, 9230 Denton Drive, Dallas 20, Texas, or use the Request Card at page 18. Circle No. 29.

Same formula as famous Kroil that has pleased 14,000 industrial users for 10 years or more. Loosens stuck together metal parts, bushings, bearings, bolts, screws, pipe, etc., "anything from an embalmer's needle to a bulldozer," one customer said. "Like an extra employee," said another. "Turned rust into mush, put $50,000 equipment back to work."

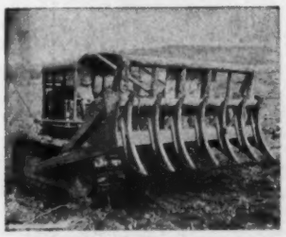
You too can get these results. *Try Aerokroil at our risk. Send $2 cash, and we'll pay postage.*

12-OZ. CAN $2. F.O.B. NASHVILLE CASE OF 12 $16.75

KANO LABS. 1057 THOMPSON LANE NASHVILLE 11, TENN.

For more facts, circle No. 378

ROCKLAND— THE MOST VERSATILE LAND-CLEARING ATTACHMENTS IN THE WORLD.



REVERSIBLE TEETH:
BOTH ENDS MAY BE USED FOR CLEARING

- ROCK RAKES
- GENERAL PURPOSE RAKES
- BRUSH RAKES
- TREE KNOCK-DOWN BOOMS
- TREE SAWS
- BACK-RIPPER TEETH
- STUMPMASTER BLOCKS
- STUMP PULLERS
- TOOL BARS
- UNDERCUTTERS
- ROOT CUTTER TEETH
- HI-BALLS AND CHAIN

Rockland Products may be purchased from Allis-Chalmers, Eimco, International Harvester and Oliver Crawler Tractor dealers. For additional information, contact direct.

ROCKLAND ALLIED EQUIPMENT CO.

3778 West Colonial Drive • Orlando, Florida

For more facts, circle No. 379

Concrete cart features automatic speed changer

A new Whiteman Model WSB-11 Power Buggy features an automatic speed changer which varies the drive ratio automatically to give greater pulling power—or greater speed—as needed. The only gear shifting is for reverse.

Dual front wheels make this a stable machine with even load distribution that protects light runways against breakage. It is compact, lightweight, and exceptionally maneuverable—designed to travel over light, narrow runways, onto elevators, and through narrow doorways. Also featured as standard equipment are a riding step and positive-control dumping mechanism.

The machine has a capacity of 11 cubic feet. It is powered by a Wisconsin engine, has front-wheel drive, and is equipped with forward and reverse controls.

For further information write to the Whiteman Mfg. Co., Dept. C&E, 13020 Pierce St., Pacoima, Calif., or use the Request Card at page 18. Circle No. 25.

The Whiteman Model WSB-11 Power Buggy for hauling concrete features a speed changer that is variable and completely automatic.

NEW-BURCH Dump Body Mounted SPREADER

A unique development in box-type spreaders

All operations are controlled by driver in the cab. He raises or lowers the spinner for variable widths of spread, and controls the volume flow of materials.

Spreads full width or half width on either side.

- Reliable 20½ hp motor.
- Bar flight conveyor belt.
- Precision built, oversize reduction worm gear drive.
- Sealed automotive type reduction gear operates spinner.
- Heat treated gears and shafts.
- Roller or ball bearings throughout.
- Hopper supported by heavy structural channel sills and has a sturdy sectional top screen.

The BURCH Corporation
MANUFACTURERS OF EQUIPMENT FOR CONSTRUCTION AND MAINTENANCE OF ROADS AND STREETS
CRESTLINE, OHIO, U.S.A.

For more facts, use Request Card at page 18 and circle No. 380

American Cyanamid names

■ James A. Feeney and John H. Smith have joined the Engineering & Construction Division, American Cyanamid Co., New York City. Feeney has been named project engineer in the project engineering department, and will be initially assigned to the company's Brewster plant projects.

Smith is the intermediate general engineer in the instrumentation section of the general engineering department. His first assignment will be on the Wallingford melamine project.

Hyster transfers

■ John Gueldenzopf has been transferred to the controller's office of Hyster Co., Portland, Ore. In his new assignment, he will be in charge of office methods and procedures for the company. Gueldenzopf was previously assistant plant manager at Hyster's plant in Danville, Ill.

PLAN HOLD
VERTICAL AND ROLL
Filing Systems
FOR PLANS, PRINTS, DRAWINGS
SAVE SPACE

In only 24 lineal inches you can file up to 1200 large sheets. Rack easily mounted on any wall at height determined by length of sheets.

SPEED USE

When plans are used by 2 or more people or departments, the PLAN HOLD Rolling Stand is a great convenience. Glides on ball-bearing casters.

PREVENT DAMAGE

Steel cabinets in modular sizes give extra protection to valuable plans. This Combo Cabinet is equipped with 48 roll file tubes. Also available with vertical files for up to 1200 sheets.

PLAN HOLD equipment brings engineering efficiency to filing and use of all large sheets. Distributed nationally through engineering supply and office equipment dealers. Return coupon for illustrated catalog and prices.

PLAN HOLD CORPORATION
5204 Chakemco St., South Gate, Calif.
Please send catalog No. 603. I am interested in vertical ☐ or roll files ☐.
Your name_____
Company_____
Street_____
City_____ Zone____ State_____

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The Best Approach to Trench-filling and Road Widening

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Safety Department:

Stresses and safety factors

by GEORGE E. DEATHERAGE, P. E.
construction consultant

The many technical terms regarding the strength of materials must be thoroughly understood when using tabular information on the strength of materials in safety work.

There are three different kinds of stresses: compressive, tensile, and shearing. Compressive stress tends to shorten a member. If, for example, a 64,000-pound load is placed on a block that has an area of 8×8 inches, or 64 square inches, each square inch of the block is under compression of 1,000 psi (this is equivalent to 64,000 divided by 64 square inches). The 64,000 pounds is an external force and the 1,000 pounds per square inch is an internal resistance. Unit stress—the 1,000 pounds per square inch—is an internal resistance per unit area that results from an external force.

Tensile stress tends to lengthen a member or to stretch it out. Suppose a steel rod 1 inch in cross section is hung from a ceiling, and it carries a load of 30,000 pounds. The tensile stress in this case is 30,000 pounds per square inch. When steel has a tensile strength of 80,000 pounds, it will take an 80,000-pound pull before it will start to get longer. In design work, however, a factor of safety of four may be used so that codes do not permit more than 20,000 pounds to be used for the unit stress. This safety factor allows for imperfections in the materials, errors in designs, and other contingencies that might overload the member. Factors of safety are always used when giving safe loads for structural members, particularly in timbers, which are subject to far more imperfections than a refined product such as steel. Do not violate safe practices by overloading a member or ignoring tables for safe loads.

Shear stress

Shear stress can cause failure of a beam by cutting action at each support. If a timber beam 12×12 inches in cross section rests on two supports and carries a uniformly distributed load of 16,000 pounds, each support carries 8,000 pounds. The supports act upwards against the load acting downward. These forces are reacting upwards and are called reactions.

If there is a failure of the beam at the supports, so that the portion of the beam between the supports drops downward and the portion on the supports stays where it is, a stress called vertical shear is developed.

Shear by a cutting action is due to a pressure downwards; there is also shear caused by a pulling action, for instance, the shear in rivets. If two steel plates are connected by a ¾-inch rivet, the cross-sectional area of which is 0.6013 square inch, and forces are applied at the ends of the plates to pull them apart, there is a tendency for the rivet to shear where the two plates join.

Stress that takes place in the bending of a beam is not a direct stress. For example, a timber beam that has supports at each end has fibers in the upper half that are in compression, and they tend to shorten while fibers in the lower half are in tension, tending to lengthen. The maximum compressive and tensile stresses occur at the upper and lower surfaces of the beam. The maximum compressive and tensile stresses occur at the upper and lower surfaces, and have zero value at the neutral surface, an imaginary one halfway between the two.

Horizontal shear may be illustrated by a number of planks laid on top of each other and subjected to load so that they have a tendency to slide or slip endways on each other. This same tendency to slide is present in solid

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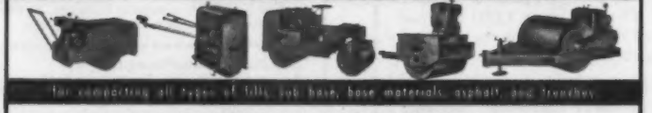

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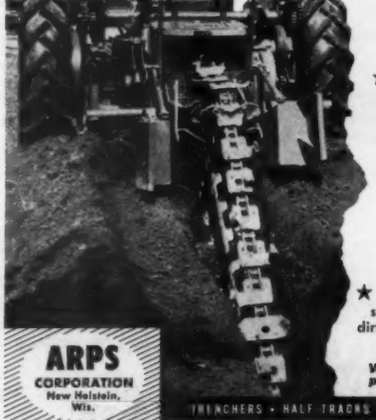

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This is the fiftieth of a series of articles on Construction Management by George E. Deatherage, P. E., The National Schools of Construction, Satsuma, Fla. The articles are based on an eight-volume "Manual of Advanced Construction Management" published by George E. Deatherage & Son, Construction Consultants, Satsuma, Fla.

embers, but the action is restrained by the wood fibers.

Materials subjected to a load change in shape; this is called deformation or strain. For compression and tension, the deformations are shortening and lengthening. The deformation that accompanies bending is called deflection.

If a member under load deflects and then returns to its original length, it is within its elastic limit: if it does not return, it is said to have exceeded the elastic limit. For all practical purposes, the yield point is that unit stress at which the material is just about to exceed the elastic limit. Ultimate strength is the unit stress that occurs at or immediately before rupture.

Modulus of elasticity

The modulus of elasticity of a material is a number that indicates its stiffness. A material is stiff when its deformation is small and unit stresses are very high. Modulus of elasticity is denoted by the letter "E" and is expressed in pounds per square inch.

When the ultimate strength is 0,000 pounds and the allowable unit stress to be used is 20,000 pounds, the factor of safety is 4. Specifications may not give the factor of safety, but the code may say that the allowable unit stress shall be a certain percentage of the elastic limit or yield point. For structural steel, where the loads are more or less constant and steady, the factor of safety of 4 may be used, but materials going into bridges and structures, where suddenly applied loads are high and the impact great, may have a factor of 6 or 10.

Once the dimensions of a member and the applied load have been determined, an investigation is made to find whether or not the member is safe. This consists of determining the actual unit stresses and comparing them with the ultimate strength or allowable unit stress of the material.

Section modulus is the moment of inertia divided by the distance of the most remote fiber from the neutral axis. It is a measure of the ability to resist bending stresses.

Radius of gyration, as applied to a cross section, is the index of the stiffness of a member when used as a column. The tendency of a column to bend varies with the ratio of the unstayed length of the column to its least radius of gyration and is known as the slenderness ratio.

Shoring and bracing

The depth to which a vertical embankment can be cut without danger of sliding is a constant multiplied by the compressive strength of the soil. A rule-of-thumb formula is Hc equals 1.33 Pc; Hc is the maximum stable distance of the cut and Pc is the compressive strength of the soil. The latter value will have to be determined in the laboratory from field samples.

For most work, safe load data accumulated from experience and made available from numerous sources is dependable. Building codes usually stipulate the nature of bracing for trenches. Minimum recommendations for trench timbering are published by the National Safety Council, 425 N. Michigan Ave., Chicago, Ill.

Cofferdams should be designed with a full consideration for all the forces to be exerted on the sheeting at various points. Comprehensive and detailed design data for cofferdams may be secured by manufacturers of steel sheet piling. Many building codes require cofferdam designs to bear the approval of the building commissioner.

Wood braces and props for the lateral support of building walls should be securely fixed at the ends to prevent slipping and should have no unsupported length greater than 20 times their least dimension. For steel, the length is 180 times the least radius of gyration. The ends of braces and props in contact with walls should be formed or constructed to provide for distribution of the stress.

When walls or other structures are underpinned, they should be adequately supported until the underpinning is in place and the concrete or mortar hardened sufficiently to take the load. The size of the footings under underpinning should not be less than the wall to be underpinned, and the maximum bearing value of the soil, as permitted by local building codes, should not be exceeded.

Unless an excavation for a building

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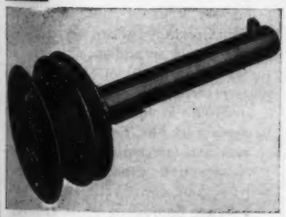

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is underpinned, it should not be carried below the depth of footings of an adjacent structure, unless the excavation is twice as far from the edge of the existing footings as the distance between the bottom of the footing and the bottom of the excavation. Excavation for footings and foundations near an existing excavation or foundation should be carried down to a level of the existing condition, unless such new excavation is located far enough away so that lateral pressure is not exerted on the existing condition. If work is being done on a standard AIA form of contract, the contractor's obligations to the owner on these matters are covered in the general conditions of the contract.

Local building codes—on sidewalk and street protection for instance—and other ordinances have to be complied with by contractors. There are many of these concerned with safety. The owner of any adjacent property may require the contractor to supply a surety bond, for instance, covering all kinds of injuries or damage resulting from the construction operations.

The building commissioner or his authorized representatives, upon exhibiting the proper credentials or proof of identity, have the right to enter any building or structure to inspect conditions which may affect the public health or safety. However, such person or persons have no right to give instructions to workmen, foremen, or supervisors, other than the person in charge of the work. Such instructions must be consistent with the existing codes, regulations, and ordinances.

All new materials and methods of construction must be first approved by the building commissioner. Usually, such materials and methods are subject to test, and approval is indicated by a general or special certificate to that effect.

The commissioner is generally authorized to deputize qualified employees of insurance companies and other inspecting or investigating agencies to make inspections and tests on his behalf.

Fire tests of materials, products, or construction should be made in accordance with the "Standard Specifications for Fire Tests of Building Construction and Materials" by the National Bureau of Standards, Washington, D. C., or the National Board of Fire Underwriters, 85 John St., New York, N. Y.

When construction is complete, it will be necessary to have mechanical and electrical work inspected and approved by the agency having jurisdiction before it is placed in service.

The required safety measures, including those required by law and ordinance and those demanded by consideration for safety on the job, will require money that should be provided in the job overhead section of the estimate. The estimator will need to visualize the needs and estimate the cost.

The ideal method of taking care of safety standards is to set them up in the form of sketches on which there is a Bill of Material, covering such items as stairways, sidewalk bridges, etc., then estimate the cost of each installation. Once this has been done, the estimator has a ready reference of the cost, which he can use when needed.

(Next month's article will deal with "Industrial Relations: Labor laws.")

Blount named trustee of University of Alabama

The University of Alabama has appointed Winton M. Blount to its board of trustees. He is chairman of the engineering department committee, president's council for development, of the university. Blount is president of Blount Bros. Construction Co., Montgomery, Ala.

Constructors group names

W. Guy Gunn has been appointed public relations director and assistant to the executive secretary of the Associated Pennsylvania Constructors. Prior to his appointment, Gunn was managing director of the Contractors Division of the American Road Builders' Association.

Raymond Concrete assigns

■ Three new district managers have been appointed by Raymond Concrete Pile Co., a division of Raymond International, Inc., New York City. Jamie H. Kerr takes over the St. Louis office. James B. Smith will be located in Kansas City, and William M. Mooney in Houston.

Koehring assigns two

■ Leslie M. LeChanu has been pointed field service representative the Export Division, Koehring Milwaukee.

The Koehring Division has John Melchi its Midwest district resentative. He will cover Colo Iowa, Kansas, Minnesota, Nebr North and South Dakota, and of Wyoming and Missouri.

New I-H manager named

■ John P. Uebelhoer has been pointed manager of the order Distribution Department of national Harvester Co., Chicago succeeds M. W. Shellabarger, who resigned.

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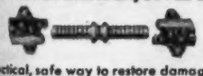

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Mack Trucks relocates government operations

■ Mack Trucks, Inc., Plainfield, N. J., has moved its operations in the field of government vehicle development and procurement to the home offices. The company had previously maintained offices in Washington, D. C., for this purpose.

R. H. McMahon, former manager of government operations, has recently been appointed assistant to the executive vice president of administration and continues to supervise Mack's government development and procurement operations. He will be assisted by E. H. Bryant, government contract administrator, who is located at the home office; and W. B. Pashkow, government products development manager, who headquarters in Dayton, Ohio.

Trailmobile assigns

■ John F. Owens has been appointed welding engineer for the Cincinnati plant of Trailmobile, Inc. The company manufactures truck trailers.

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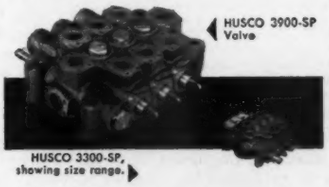

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For more facts, use Request Card at page 18 and circle No. 393

Names in the News

William E. Clark, president and chief operating officer of Dravo.

Dravo elects president and two top executives

William E. Clark has been elected president and chief operating officer of Dravo Corp., Pittsburgh. Clark, who has been executive vice president since 1955, succeeds Carl B. Jansen, who has been elected chairman of the board and chief executive officer. Jansen replaces the retired William K. Fitch.

C. N. Hollingsworth, Jr., has been elected president of Dravo-Doyle Co., a subsidiary.

H. R. Mantle has been named assistant to the president.

Twaits-Wittenberg names

Herbert C. Ball has been appointed general manager of Twaits-Wittenberg Co., Los Angeles, constructors and engineers. He was previously the company's construction manager.

Denny, Drake to receive the 1960 Moles' awards

William Denny and George M. Drake have been named the 1960 recipients of the awards given annually by The Moles for outstanding achievement in construction. The award is given to one member of the society and one non-member. Denny is the member winner. The awards will be made at the annual dinner at the Waldorf-Astoria Hotel on January 27.

The executive vice president of Merritt-Chapman & Scott Corp. in charge of its construction department, Denny is supervising the Glen Canyon Dam in Arizona, Priest Rapids Dam in Washington, and the main generating plant of New York's Niagara Power Project.

George M. Drake, left, and Wil... Denny will receive the 1960 M... Awards at a dinner this month i... Waldorf-Astoria Hotel, New York C...

Drake is president and ge... manager of Johnson, Drake & P... Inc., Minneapolis. The company ... building a giant installation in La... dor for the Air Force; and in Viet... and Central America it is build... highways, buildings, bridge fou... tions, and dams.

Ebasco names six new consultants

New additions have been made to the management consulting staff of Ebasco Services, Inc., New York City. Carl E. Anderson will be a general management consultant in the manufacturing and industrial field; Harold P. Richmond will be general gas consultant; and Paul L. Gill will be director of industrial planning. All three will headquarter in the home office.

Clinton J. Sammond will be a management consultant at the Dallas office, and Raymond M. Holmes will supervise management consulting activities in the Washington, D. C., offices.

R. D. MacTavish has joined the Management Consulting Division as a general management consultant.

Wigton-Abbott elects president, chairman

C. B. Wigton, Jr., has been elected president of Wigton-Abbott Corp., engineering and construction firm of Plainfield, N. J.

C. Benson Wigton, Sr., co-founder of the firm and its president for 35 years, assumes the newly created post of chairman of the board. E. P. Abbott continues in the office of executive vice president.

McKee & Co. changes

Carl L. Nilson has been named general manager of the Union, N. J., office of Arthur G. McKee & Co., designer and builder of Cleveland. He was formerly general manager of the engineering office of Arthur G. McKee & Co. of Canada, Ltd. John Findlay succeeds Nilson in the Toronto post.

BPR man named division engineer for highway

Lowell S. Coy has been appointed by the U. S. Bureau of Public Roads as division engineer for the North Carolina State Highway Commission. He succeeds the retired A. L. Hooper. Coy will direct federal participation agreements in all highway work in North Carolina that involves federal funds.

MOBILE OFFICE Units are low in cost . . . Built to your specifications . . . There's a unit to fill your every need.

Because MOBILE OFFICE Units are easy to move from job to job, they enable you to have office, engineering, paymaster and other facilities at every point of your operation.

These units are economical, time saving, rugged and durable. They are self-containing, and are available with air-conditioning, and can be fitted to your specifications.

MOBILE OFFICES are being used by major contractors and other major businesses throughout the United States. In every case they have proven their worth.

Remember, whatever your needs may be, a MOBILE OFFICE Unit can be built to fill your requirements.

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"KIM HOTSTARTS keep us ready to roll"

Like The Washington Water Power Company, KIM HOTSTART engine preheaters will keep your equipment ready to go when the temperature is low. KIM Hotstarts plug into electric circuit when trucks are idle, draw off cold water, heat it, and circulate it back through the engine. High corrosion resistance. Fits gas or diesel engines. See your automotive supplier or write to us....

KIM Hotstart

KIM HOTSTART MFG. COMPANY
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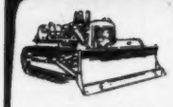
Attention CONTRACTORS



The Greer School will train your men to operate or service all types of heavy equipment. Training conducted on hundreds of acres of land set aside for this purpose to simulate actual operating conditions. Our placement department can also provide men you need. Write for information and tuition rates.

MECHANICS *training*

The Greer heavy equipment training shops provide highly practical instruction covering every step in maintenance and service of all types of current equipment. Training includes gasoline and diesel engine work and hydraulic systems. Students work on actual equipment in addition to classroom training.

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Greer heavy equipment operator course graduates are ready to step into any job in the field. Practical classroom training on theory and operation is supplemented with hundreds of hours of operating every type of road building, earth moving and construction equipment.

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SAFE • SPEEDY • DEPENDABLE

Derricks For every contractor's need—Stiff-Leg, Guy Line, Setter, A-Frame, Pole and Tripod, Roofers' Circle Swing Derricks... hand and/or power operated. Proved performers on every type of job. Safe and dependable.

"PROVED IN SERVICE"
Sasgen

Hoists Made to fit your requirements—large or small. Complete units, like the Liftamatic, which reaches up to 90 ft., carries 1200 lb. load with electric or gasoline power—or Contractors' Drum Hoist Units, single or double drum, with capacities from 500 to 5500 lb. single line pull. Optional power.

Winches From U. L. approved safety scaffold winches to heavy-duty hand-powered winches that will take from 400 to 40,000 lb. loads, Sasgen has a complete line to handle your job quickly and safely. You can't buy a better winch!

Handled by Leading Equipment Distributors Everywhere
WRITE FOR CATALOG AND PRICES
Sasgen DERRICK COMPANY
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L. M. Clauson, left, and R. M. Tutton, chief engineer and deputy chief engineer, of the Iowa State Highway Commission.

Iowa Highways names chief engineer, deputy

Effective February 1, L. M. Clauson will be the new chief engineer of the Iowa State Highway Commission. He succeeds John G. Butter, who resigns this month after 40 years of service.

District engineer R. M. Tutton is promoted to deputy chief engineer, succeeding Clauson.

CEMA elects president, officers, and director

Orlan A. Johnson has been elected president of the Conveyor Equipment Manufacturers Association to succeed J. B. Nordholt, Jr. Johnson is president of Gifford-Wood Co., Hudson, N. Y.

The roster of newly elected officers includes vice president E. H. Woodberry, treasurer H. A. Barber, and secretary G. H. Woodland. R. C. Sollenberger has been re-elected executive vice president.

E. L. Weinthaler is a new director, and Nordholt continues as a director.

Asphalt Institute news

James C. Bunyard has been appointed district engineer at Atlanta, Ga., by The Asphalt Institute. Formerly chief engineer at the Columbus, Miss., Air Force Base of the Strategic Air Command, he will now serve Georgia, Florida, and South Carolina.

NSA elects officers

Charles W. Ireland, chairman of the board of Vulcan Materials Co., Birmingham, Ala., has been elected president of the National Slag Association. At the same time, Edward C. Levy, Sr., was elected vice president; E. W. Bauman, managing director; and W. S. Shaw, treasurer.

PCA elects five

Five new members have been elected to the board of directors of the Portland Cement Association. The men are: Chester S. Crawford, L. R. Forbrich, Ellroy King, Frank B. Warren, and W. S. Ziegler. Retiring directors are Albert M. Andreas, B. F. Cox, C. T. Fuller, and L. T. Welshans.

NEXT STOP IRAN . . .

HERE is partial shipment of 20 Model 1400 Wisconsin Tilt Trailers headed for Iran . . . chosen for the rugged, built-in dependability that the Wisconsin line is famous for. These 16 ton capacity, one man load and unload trailers with EASY UP . . . EASY DOWN deck insures on-the-job efficiency that saves time and dollars every haul.

Write for complete Wisconsin Trailer Line

WISCONSIN TRAILER COMPANY, INC.
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SELL TO UTILITIES

Our client company will handle the Distribution, Sales and Service of your products to utilities nationally on a basis highly advantageous to you.

This is a well established, highly successful manufacturer of public utility construction equipment. They have just enlarged and streamlined their marketing management. They are undertaking extensive development of their own products. In addition, they will complement their line with related products, large and small—pneumatic, electrical, hydraulic, mechanical equipment and accessories. They will handle only one product of a kind.

This is your opportunity to increase your sales through a dynamic and aggressive selling organization.

We have been retained so that principals may inquire in confidence. Acceptable companies will be put in direct contact with the principals of our client company.

Write or telephone:
Mr. Don Withers, Division Manager

ALAN R. KRULL AND COMPANY
Management Consultants
8 E. Michigan • Chicago 3 • DE 2-2543

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$1,000? $1,500? $2,000? These are normal costs for training new operators—except for TORQMATIC DRIVE owners. They report saving up to $2,000 every time they break in a "rookie."

Reason? TORQMATIC takes guesswork out of shifting – ends shock-load damage and the need for engine-disconnect clutch repairs. TORQMATIC *automatically* adjusts engine output and speed to load or terrain changes.

TORQMATIC owners know that no operator can handle the "stick" and clutch as smoothly and efficiently—*every* time – as an Allison TORQMATIC. They bought TORQMATIC because they know, too, what it costs when rookies make a shifting and clutching mistake.

How can you eliminate these costs?

Look beyond first cost and see the total cost. Then change from clutch-pedal equipment to Allison TORQMATIC. You'll save costly engine-disconnect clutch replacements, too-frequent overhauls of overtaxed engines, repair bills for shock-load-damaged axles and drive lines.

Why not get the full story today? See your equipment dealer or write Allison.

ALLISON DIVISION OF GENERAL MOTORS
Indianapolis 6, Indiana
In Canada: General Motors Diesel Ltd., London, Ontario

Allison TORQMATIC

TORQMATIC® DRIVES
THE MODERN DRIVE FOR MODERN EQUIPMENT

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Distributor Doings

B-L-H appoints three to carry Lima line

Three distributors have been appointed by Baldwin-Lima-Hamilton Corp., Construction Equipment Division, Lima, Ohio.

A. H. Cox & Co., 1757 First Ave. S., Seattle, will cover 17 Washington counties. Inland Diesel & Machinery Co., E. 3511 Trent Ave., Spokane, will cover all counties east of and including Okanogan, Douglas, Grant, and Benton in Washington; Wallowa County in Oregon; all counties north of and including Idaho County in Idaho; and all counties west of and including Flathead, Missoula, Granite, and Ravalli in Montana. Both dealers will carry Lima Austin-Western crushing, screening, and washing equipment.

Handling Lima shovels, cranes, draglines, and pull-shovels, and the Lima Roadpacker in seven New York counties is J. C. Georg Construction Equipment, Inc., 4438 James St., Syracuse. Its branch at 2237 Central Ave., Schenectady, will serve 14 New York State counties, carrying the Lima Austin-Western crushing, screening, and washing equipment line.

Wallace Supplies revamps distributorships, area

After 60 years of selling its bending machines and abrasive cutting saws through dealers on an open-account basis, Wallace Supplies Mfg. Co., Chicago, has gone into exclusive-territory basis for its sales.

Dealers handling abrasive cutting units are: Harley-Pence Machinery Co., 1805 N. Hillhurst Ave., Los Angeles, and The M. M. Thackaberry, Inc., 1300 S. Soto St., Los Angeles, both covering the West Coast; and William Orlick, Ltd., 35 Glen Road, Hamilton, Ont., Canada, serving that province.

Those dealers that will carry binding machines are: Machinery Sales Co., 2838 Leonis Blvd., Los Angeles, also serving the West Coast; Williams & Wilson, Ltd., serving Ontario and Quebec provinces; and The Canada Fairbanks-Morse Co. Ltd., covering all but the Maritime provinces.

Both lines of equipment will be stocked by Allied North West Machine Tool Corp., 1222 S. E. Seventh Ave., Portland, Ore., for that area; Cleveland Duplex Machinery, 16 Warren Road, Lakewood, Ohio, for the Cleveland area; Lakeshore Machinery & Supply Co., 400 W. Lakeshore Ave., Muskegon, Mich., for the central part of the state; and Edward A. Lynch Machinery Co., 29 Wynnewood Road, Wynnewood, Pa., for the eastern part of the state, southern New Jersey, Maryland, and Delaware.

Also carrying the bending and cutting machines are: Leonard

Align Concrete Forms Quickly and Accurately with the *Ellis* WALL BRACE

So Simple to Use! The Ellis Wall Brace Adjusts Easily With a Claw Hammer

Nails to Two Sides of a 2 x 4 with Duplex Nails

6-Inch Take Up Provided

TURNBUCKLE SEALED AGAINST CLOGGING CONCRETE AND MUD

- For wall forms, spandrel beam forms, and tip-up walls
- Use at top or bottom of wood brace
- Rolled corner: greater strength, better fit
- Also available with angled end plate

Ellis Wall Brace usable many different ways, easily adjusted!

Write for new information sheet which gives complete details.

ELLIS MFG. CO. INCORPORATED

211 N.W. 4TH ST. • OKLAHOMA CITY, OKLAHOMA

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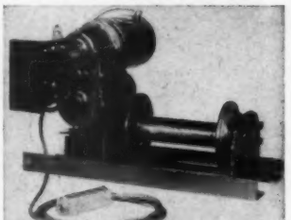
New All-Purpose Winch and Hoist Works Off Any 6- or 12-Volt Battery



The new MY-TE all-purpose winch and hoist operates from any 6- or 12-volt battery. Lifts 2500 pounds! Pulls 5000 pounds! Mounts on truck, car, boat — anywhere — with just six bolts. It's portable — can be quickly shifted from one job to another by one man. Only 27" l. x 12" w. x 14" h. Weighs just 60 lbs. Large drum with 5½" diameter flanges has capacity of 150 feet (¼" cable); 70 feet (⅜" cable). Stress proof shafts and gears with powerful 175 to 1 ratio, Timken bearings, sealed gear housings, clutch for fast no-load operation, constant pressure brake for cable reeling. Ten-foot remote cable has forward and reverse control. Free load drum speed — 32 rpm. Backed by 90-day warranty. Costs far less than winch with power take-off . . . less than any winch of equal size or capacity — just $237.50. (Also: 110-volt model $280.00.) Both fob, Indianapolis.

FREE Bulletin . . . Dealer Inquiries Invited

CITY ENGINEERING CO., INC.

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SALES RENTALS

CAPACITY TO 600 TONS

FOR:
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- UNDER-PINNING
- BRIDGES
- PIPE PUSHING

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DESIGNERS and MANUFACTURERS OF

Hydraulic Units For Special Applications

RICHARD DUDGEON INC.

789 BERGEN STREET BROOKLYN, N. Y.

• ST 8-4048 •

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Nourie, Inc., 2414 W. Liberty Ave., Pittsburgh, Pa., for that area; Perine Machinery & Supply Co., 1921 First Ave. S., Seattle, for that area; Foulis Engineering Sales, Ltd., Halifax, N. S., Canada, for the Maritime provinces; and Alexander Orlick, 5316 Park Ave., Montreal, Que., for that province.

Davey Compressor names six new distributors

Six direct factory distributors have been appointed by Davey Compressor Co., Kent, Ohio, to handle its full line of equipment. The dealers are: Abele Tractor & Equipment Co., 72 Everett Road, Albany, N. Y.; Service Machinery Division, Western Trailer Co., Lubbock, Texas; Central Machinery Co., Abilene, Texas.

Anderson-Thomas Co., Inc., 2100 Winnebago St., Madison, Wis.; Way-Ken Contractors Supply Co., 5842 W. Lawrence Ave., Chicago; and Frontenac Equipment Co., 755 S. Lindbergh, St. Louis.

New RCA appointments

Five manufacturer's representatives for its mobile communications equipment have been named by Radio Corp. of America, Camden, N. J. The representatives and the areas assigned are: Kacy Communications, Inc., Kansas City, Mo., for eastern and central Kansas and western Missouri; Electronic Enterprises, Inc., St. Louis, for southern Illinois and eastern and central Missouri; Memco, Inc., Memphis, for western Tennessee; Treece Communications, Inc., Little Rock, for central and western Arkansas; and Electronic Distributors, Inc., Muskegon, Mich., for five counties in the vicinity of Muskegon.

Yale & Towne division names representative

Marshall Supply & Equipment Co., Inc., 920 E. Archer, Tulsa, Okla., has been named an exclusive Yale industrial lift-truck and tractor-shovel franchise representative for that state. The dealer also maintains a branch at Oklahoma City. The Yale industrial lift trucks and tractor shovels are products of the Yale Materials Handling Division, The Yale & Towne Mfg. Co., Philadelphia.

The division has reorganized Kimball Industrial Sales, Inc., South Bend, Ind., franchise representative for the sale and service of industrial lift trucks and tractor shovels in northern Indiana and southern Michigan.

Parker-Hannifin division appoints distributors

Louisiana Supply Co., Inc., Lake Charles, La., has been named a franchised distributor for industrial tube and hose fittings by the Parker Fittings & Hose Division, Parker-Hannifin Corp., Cleveland.

Leinart Engineering Co., 412 Fifth Ave. N. E., Knoxville, Tenn., has been named a distributor for Crown compressed-air-line units, produced by Hannifin Co., Des Plaines, Ill.

Daybrook Hydraulic news

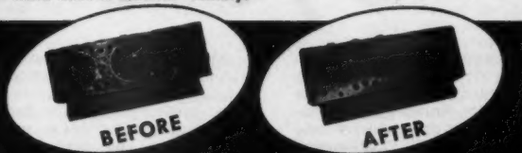
Truck Service Center, South Beloit, Ill., has been appointed sales and service representative for Daybrook Hydraulic Division, Young Spring & Wire Corp., Bowling Green, Ohio. The dealer will carry Daybrook steel and aluminum dump bodies, telescopic and underbody hydraulic hoists; and Power Gates in an 11-county area in northern Illinois and southern Wisconsin.

Pacific Mercury names

Le Manquais Co., Torrington, Conn., has been named a stocking distributor for electric plants and Solo concrete vibrators produced by Pacific Mercury Mfg. Corp., Van Nuys, Calif.

DON'T THROW AWAY CRACKED DIESEL CYLINDER HEADS

You can save 50% of replacement cost with Factory Rebuilt Swick-Guth Heads. Swick-Guth restores cracked or worn heads, blocks, transmission cases to a Guaranteed good as new condition by the Controlled Heat Process . . . successfully used for more than a Quarter Century.



Send today for price list and a free booklet on the famous Swick-Guth Process and the name of the dealer nearest you.

SWICK-GUTH CO.
McPHERSON, KANSAS • FORMERLY GUTH CO.
"SPECIALISTS IN WELDING DIESEL CASTINGS"

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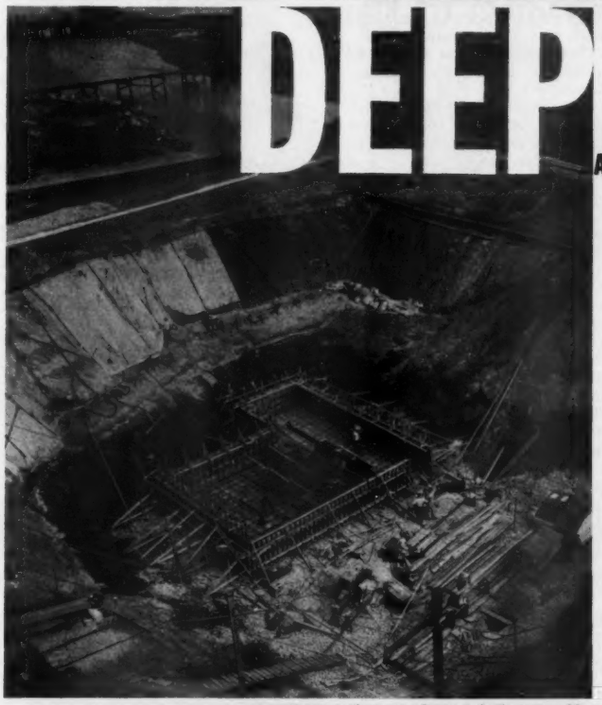
DEEP AND DRY



A Stang wellpoint system is predraining and stabilizing this pump station jobsite quickly, economically and efficiently. The site is clear, conditions are very workable. This is typical of Stang jobs.

JOHN W. STANG CORPORATION
Engineers and Manufacturers of Dewatering Equipment
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Omaha • Tulsa • Minneapolis • St. Petersburg
Mobile • Tacoma

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LOCATED AT ROUND MOUNTAIN, NEVADA

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EARTH MOVING EQUIPMENT
1—SCRAPER-LOADER, 8-10 yd.
1—D-8 CAT, with Hyster loader, 2 U series.
1—D-8 CAT. with Doxer Blade
1—WINCH, Hyster, logging for D-8.
2—TRUCKS, Jeep.
1—TRUCK, pickup, Chevroiet.
1—TRUCK flat bed.
1—TRUCK, fuel.

57 MOTORS, MISCL SIZES.

TOOLS & SHOP EQUIPMENT

25,000 ft. WIRE & CABLE
68 Transformers 3 KVA
833 KVA switch gear.

29—SCREEN sections, new manganese, for Trammel.
4—SCREENS, 4' x 12' Tyler Ty-Rock, double deck, 10 H.P. motors.

CONVEYORS TOTALING OVER 7,000 FT.
1—CONVEYOR, 60" x 150' center to center belt, with steel frame work, 100 H.P. gearmotor.
1—CONVEYOR, 42" x 1250' center to center belt, with steel framework, two 100 H.P. gearmotors.
1—CONVEYOR, 36" x 225' center to center belt, 100 H.P. gearmotor, var. speed drive.
3—CONVEYORS, 36" x 50' belt conveyor with 7½ H.P. gearmotors, steel frames.
159—CONVEYOR, idlers, troughing, 42".

29 PUMPS MISC. SIZES
2—PUMP, sump, Cascade, with 30 H.P. motors.
2—PUMP, sand SRL A.C., 6 inch, with 30 H.P. motors.
1—PUMP, Yuba, water pump, 14", with 125 H.P. motor & controls.
5-PUMPS, diaphram, Dorrco duplex, 6" & 8", less motors.
1—PUMP, Byron Jackson, deep well pump, 30 H.P. with bowl assy.

LARGE 2½ YD. TO 7 YD. SHOVELS & DRAGLINES
1—SHOVEL, 1708, Elec. 7 yd. Bucyrus-Erie.
1—SHOVEL 54B, Diesel, 3 yd. Bucyrus-Erie.
1—DRAGLINE, 54B, Diesel, Bucyrus.
1—DRAGLINE, 111 Marion, with shovel attachment, 3½ yd.
1—COMPRESSOR 1R, type 40, w/50 H.P. motor.
3—CRUSHER, Brown Chipmunk
1—CRUSHER, 42" x 36, w/100 H.P. Motor & Starter.
4—FEEDERS, one, belt
1—GENERATOR, 50 KW Cat diesel.
1—GENERATOR, 2KVA, Koehler.
1—HOPPER, loading facility, complete

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Product LITERATURE

To obtain free copies of any of the literature described in the following section, circle the designated number on the Request Card at page 18.

Truck cranes—a bulletin on straight and jib-boom Power Loader cranes for trucks. Includes complete specifications for straight-boom models (4,000-pound lifting capacity) and the jib-boom model (7,000-pound lifting capacity). Action photographs. Form No. PL-5901.

Write to the Daybrook Hydraulic Division, Young Spring & Wire Corp., Dept. C&E, Bowling Green, Ohio, or use the Request Card at page 18. Circle No. 142.

Electric plants—a catalog describing Onan high-capacity electric generating plants. Lists more than 45 basic models of gasoline and diesel-engine-driven generator sets. Gives specifications for both engine and generator. Optional accessories also illustrated. Catalog F-146.

Write to D. W. Onan & Sons Inc., Dept. C&E, 2515 University Ave. S. E., Minneapolis 14, Minn., or use the Request Card at page 18. Circle No. 143.

Drilling tools—a catalog containing illustrations and specifications of every tool in the Brunner & Lay line, including carbide Rok-Bits, drill rods, striking bars, and extension steel. Also covers such demolition tools as moil points, clay spades, and asphalt cutters. Gives details on a new line of rope-thread blast-hole drilling tools. Catalog No. 759.

Write to Brunner & Lay, Inc., Dept. C&E, 9300 W. King St., Franklin Park, Ill., or use the Request Card at page 18. Circle No. 144.

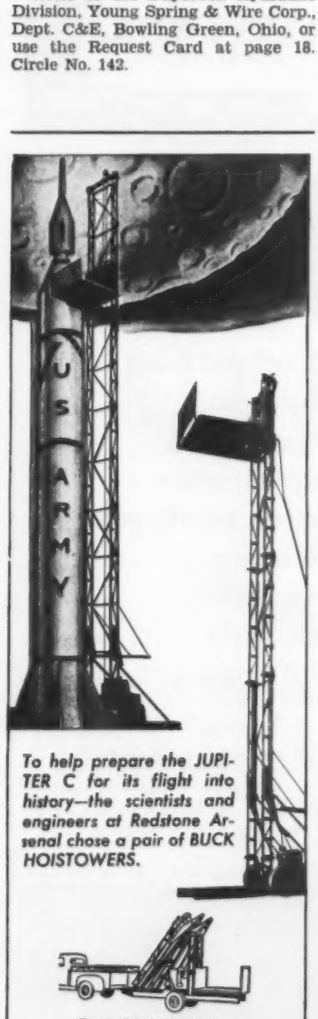
Crawler track components—literature on Schnacke track-chain and top roller assemblies, links, pins, and bushings. According to the manufacturer, neither pads nor complete sprockets need be replaced when Schnacke rails are used to convert a standard track to a heavy-duty track.

Write to the Schnacke Mfg. Corp., Dept. C&E, 1016 E. Columbia St., Evansville 7, Ind., or use the Request Card that is bound in at page 18. Circle No. 89.

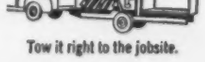
Curve-crown pulley—literature on the Stephens-Adamson curve-crown welded, all-steel pulley. Features comprehensive technical and engineering data, specifications, diagrams, and illustrations. Bulletin No. 558.

Write to the Stephens-Adamson Mfg. Co., Dept. C&E, Ridgeway Ave., Aurora, Ill., or use the Request Card at page 18. Circle No. 145.

Power-shift transmission—a booklet describing working details and mechanical relationships of the Caterpillar power-shift transmission. "Exploded" and schematic drawings show the flow of power from the engine through the two sets of planetary gears and the torque converter. Also explains how the best features of both direct-drive and torque-converter equipped tractors are utilized to obtain higher efficiencies and greater



To help prepare the JUPITER C for its flight into history—the scientists and engineers at Redstone Arsenal chose a pair of BUCK HOISTOWERS.



Tow it right to the jobsite.

the BUCK hoisTower

Self-erecting to a height of 45 ft. The tower can be placed and erected by just one man in 23 minutes.

The HOISTOWER will raise a load of 2500 lbs. to heights of 175 ft. and more. With speeds up to 170 ft. a minute, it is the strongest and fastest portable HOISTOWER in the world.

Concrete Buckets, Poop Decks, Booms, Extra Sections and other Accessories, make it the most versatile and money-making machine a contractor can have.

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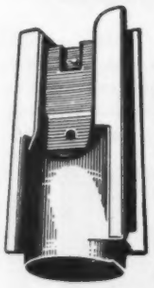
DEPENDABLE SEMI-STEEL PILE HAMMERS



PILE DRIVER HAMMERS

Well designed of tough close grained semi-steel to give maximum impact for easy reeving. Can be adopted to fit present leads. Fast service in sizes 2000 lbs. to 4000 lbs. in 250 lb. increments.

FOLLOW BLOCKS

Sturdy semi-steel. Quick delivery on all sizes for hammers weighing 2000 lbs. to 4000 lbs.

SWINGING LEADS One Section All-Steel
Lengths 20' 25' 30' 35' 40'

Maintain your pile drivers at top efficiency with this low cost replacement equipment.

Buy Direct From Manufacturer and **Save!**

WRITE NOW . . .
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Sioux City Foundry & Boiler Co.

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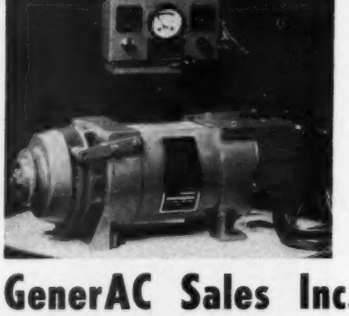

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the Electrol GenerAC will supply shop-type electrical power from your truck, car or tractor — anytime, anyplace.

This high-output, 115/230-volt, 60-cycle alternator is available in a size for your every requirement.

Mounting is simple, with kits available for all popular makes of vehicles.

Write to

GenerAC Sales Inc. 124 S. Main Street Wales, Wisconsin

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Negative thinking can cost you 50% more

Don't Scrap Giant Tires When Retreads Do the job at half the Cost

Giant size savings plus new tire mileage are yours when you specify Southern Tire's expert retreading service.

No need to worry over costly downtime, either. Southern Tire trucks pick up your tires after hours and return them quickly to service.

A wide selection of treads include Rock Service • Traction Types • Rib Treads.

All sizes from 1100 x 24 to 33.5 x 33.

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production. Form No. 33403.
Write to the Caterpillar Tractor Co., Dept. C&E, Peoria, Ill., or use the Request Card at page 18. Circle No. 146.

Compressors, drills, others—a 64-page catalog covering the entire range of construction machinery manufactured by Chicago Pneumatic. Provides specification data on the company's complete line of air compressors, rock drills, pneumatic and electric tools, and stationary engines. Also offers information on the proper selection of air compressors, as well as air-pressure and air-hose recommendations for most air-operated construction tools. Catalog No. 600-9.
Write to the Chicago Pneumatic Tool Co., Dept. A-3, Dept. C&E, 6 E. 44th Street, New York 17, N. Y., or use the Request Card at page 18. Circle No. 147.

Paving calculator—a handy slide-rule type of asphalt-paving and road-widening calculator that permits its user to figure the area or tonnage of asphalt mix needed to pave any road of known length, width, and thickness of mat. Another scale allows immediate computation of the tons of stone or yards of dirt involved in any road-widening operation where the necessary dimensions are also known. Available free on request.
Write to the Barber-Greene Co., Dept. C&E, 400 N. Highland Ave., Aurora, Ill., or use the Request Card at page 18. Circle No. 148.

Concrete vibrators—an illustrated folder showing the latest Wyco concrete vibrators and attachments. Covers units for concrete finishing, cleaning, screeding, core drilling, and rock pointing. Catalog No. 59-V.
Write to Wyzenbeek & Staff, Inc., Dept. C&E, 223 N. California Ave., Chicago 12, Ill., or use the Request Card at page 18. Circle No. 149.

Welding-wire guide—a newly revised edition of Air Reduction's Aircomatic welding-wire pocket guide. The handy 84-page booklet has been brought completely up to date to include the latest information on Airco's complete line of gas-shielded metal-arc welding wires, including data on the improved A675 steel wire, as well as the A666 steel and A556 aluminum. Form ADC-873A.
Write to the Air Reduction Sales Co., Division of Air Reduction Co., Inc., Dept. C&E, 150 E. 42nd St., New York 17, N. Y., or use the Request Card at page 18. Circle No. 150.

Crawler tractor—a catalog describing the features of the International TD-9 crawler tractor. Emphasizes such standard features as 55.7 drawbar horsepower, a 5-roller track frame, and five forward-speed and one reverse-speed transmission.
Write to the International Harvester Co., Dept. C&E, 180 N. Michigan Ave., Chicago 1, Ill., or use the Request Card at page 18. Circle No. 151.

Space heater—a fact sheet describing the White Heat Model H-1 space heater. Stresses the unit's unexposed-flame design. Photographs, specifications included.
Write to the White Mfg. Co., Dept. C&E, 1227 W. Beardsley Ave., Elkhart, Ind., or use the Request Card at page 18. Circle No. 152.

Electric plants, vibrators, others—a condensed version of the 1959–60 catalog of Pacific Mercury construction machinery. Covers the company's complete line of electric plants; the Mobilite trailerized floodlighting unit that generates its own power; neon and incandescent flasher warning lights; street barricades; and Solo concrete portable vibrators.
Write to Pacific Mercury Electronics, Inc., Dept. C&E, 13232 Leadwell, North Hollywood, Calif., or use the Request Card at page 18. Circle No. 153.

Mechanical conveyor screens—literature on Syntron mechanical conveyor screens, designed for coarse and medium sizing. Contains complete descriptions and specifications for three standard models.
Write to the Syntron Co., Dept. C&E, 227 Lexington Ave., Homer City, Pa., or use the Request Card at page 18. Circle No. 154.

Hose fittings—a folder containing helpful information for selection of industrial hose and fittings in regard to hydraulic pressures and other operating conditions. Describes and illustrates five types of reusable fittings in a variety of ends. For assemblies with permanently attached ends, 13 kinds of hose and 13 different ends are shown. Also includes data on hose-fitting adapters and hose-assembling equipment. Bulletin 4406B1.
Write to the Parker Fittings & Hose Division, Parker-Hannifin Corp., Dept. C&E, 17325 Euclid Ave., Cleveland 12, Ohio, or use the Request Card at page 18. Circle No. 26.

Palletizing—a booklet on the subject of palletizing and mechanized materials handling for mason and general building contractors. Describes and illustrates the benefits of using a mechanized-pallet system and describes the methods used.
Write to the American Road Equipment Co., Dept. C&E, 4201 N. 26th St., Omaha, Nebr., or use the card at page 18. Circle No. 9.

Warning lights—a catalog of Dietz hazard warning and portable lights. Describes a variety of flashers, lanterns, and torches, giving brief specifications for each. Catalog No. 55.
Write to the R. E. Dietz Co., Dept. C&E, 225 Wilkinson St., Syracuse, N. Y., or use the Request Card at page 18. Circle No. 86.

81 hydraulic models to choose from!
THE WORLD'S MOST COMPLETE LINE

SIMPLEX
HYDRAULIC JACKS and PULLERS

STANDARD HYDRAULIC JACKS
11 Models
1½ to 100 tons capacity
5¼" to 22" travel

"JENNY" CENTER-HOLE HYDRAULIC PULLERS
6 Models
30 to 100 tons capacity
3¼" to 10" travel

ROL-TOE FOOT-LIFT HYDRAULIC JACKS
3 Models
10 to 50 tons capacity

RE-MO-TROL PULLERS
Solid and Center-Hole Rams
39 Models
10 to 300 tons capacity

HYDRAULIC SERVICE and BUMPER JACKS
9 Models
1¼ to 20 tons capacity
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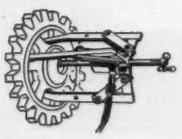
HYDRAULIC PULLERS
4 Models
20 and 30 tons capacity
Push-Pullers, Double and Triple-Grip Pullers

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Look for further information on Lever and Screw Jacks in other advertisements.

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HOFFMAN "Thin Wall" MASONRY CORE BITS
. . . save time and costs on foundation testing

Hoffman 9" Thin Wall Bit cores through 14" reinforced concrete in record time. Fast, easy drilling through hardest materials such as reinforced concrete, asphalt, fused quarts, etc. make Hoffman Thin Wall Bits ideal for low cost foundation sampling, drilling mounting holes or for conduit openings. Holes are exact size the first time . . . no digging, chipping, forming or extra equipment is needed. Especially designed to cut contract drilling costs. Hoffman Bits are available in standard O.D. sizes from 1" to 12", Diamond Surface Set or Impregnated.

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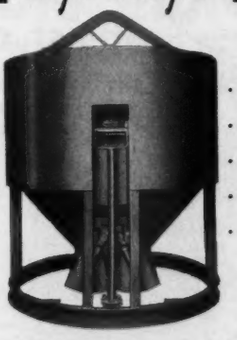
NEW! JOHNSON® *light-weight* CONCRETE BUCKETS



SIZES:	NET WEIGHT*
½ cu. yd.	355 lbs.
¾ cu. yd.	455 lbs.
1 cu. yd.	700 lbs.
1½ cu. yd.	840 lbs.
2 cu. yd.	1075 lbs.

*approx.

Light in weight, low in cost, this all-new series of concrete buckets from Johnson gives high ratio of capacity-to-weight. Makes each pour more profitable for you! Features: all-welded steel hopper, frame. All working parts above discharge point and well within bucket outline—protected during work, storage, shipment. 50° slope of cone bottom gives complete discharge of medium-slump concrete. Short-stroke, easy leverage handle. Double-clam gates. Stainless steel shafts in nylon bearings. Write today!

— — — Mail to C. S. JOHNSON CO., Champaign, Ill.— — — —
Send more information on ____ cu. yd. light-weight concrete bucket
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COMPANY _____
STREET _____ J919 CAE
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Sizes #3, 4, 5, 6, 7, 8, 10 and 11
40' and 60' Lengths

Also Available: 160 tons No. 1 60# Relaying Rails located at New Iberia, Louisiana.

Contact:
J. S. GLAZER
GLAZER STEEL CORPORATION
1556 Tchoupitoulas Street,
New Orleans, La.
Telephone: EXpress 2761

Manufacturers Memos

Frederick C. Chambers, export manager for the Koehring Co.

The new export manager for the **Koehring Co.**, Milwaukee, is **Frederick C. Chambers**, who will be in charge of the company's international sales operations. **Edwin A. Smith**, former director of the Export Division, continues as vice president of the division, as well as of Koehring Inter-American Co.

Walter Harcourt-Palmer has been named Eastern district manager for the Koehring Division.

The Yale Materials Handling Division, **The Yale & Towne Mfg. Co.**, Philadelphia, has placed **George F. Quayle** in charge of new-product development. He will devote full time to the development of new truck models, new attachments, and new types of handling equipment.

Richard F. Brackin, chief gas truck engineer, takes over Quayle's former post of assistant director of engineering.

Wayne L. Dowdey, general sales manager of Eimco.

Two management appointments have been made by **The Eimco Corp.**, Salt Lake City. **Wayne L. Dowdey**, former manager of the corporation's Southern district, is now the general sales manager. In his new post, Dowdey will be responsible for all domestic sales of Eimco's various divisions.

Vice president **Paul O. Richter** has been named general manager of the Filter Division.

The new president and chief ad ministrative officer of **U. S. Ste Corp.**, Pittsburgh, is **Leslie B. Worth ington.** He was also elected a direct and chairman of the executive com mittee, and chairman of the opera tions policy committee.

E. B. Speer has been appointed ad ministrative vice president of centra operations (steel and coal), succeed ing **Edwin H. Gott. R. W. Graham** be comes vice president of steel opera tions, succeeding Speer.

J. D. McCall has been appointe president of Columbia-Geneva Ste Division, San Francisco.

Dr. Robert F. Mehl, dean of gradu ate studies and head of the Depart ment of Metallurgy at Carnegie Insti tute of Technology, will become a consultant for scientific liaison be tween U. S. Steel's research organiza tion and various universities and research institutes in Europe.

Harvey B. Jordan, executive vice president of production, has been named executive vice president and chairman of the general administra tion committee. Edwin H. Gott suc ceeds Jordan.

R. W. Napp has been named man ager of the Chicago office of **Diamond Chain Co., Inc.**, Indianapolis subsidi ary of American Steel Foundries. Napp, assistant manager for the past

R. W. Napp, manager of the Chicago office of Diamond Chain Co.

ten years, succeeds D. G. Viskniski who has been appointed assistant manager of sales at the company's home office.

The company has named **Jack L. Cooper** manager of sales to succeed **A. S. Basten**, who retired. **H. B. Blendorfer**, formerly district manager of the Cleveland office, has been as signed as manager of market research in Indianapolis.

New appointments for the Pacific region of Allis-Chalmers Industrial Group, **Allis-Chalmers Mfg. Co.**, Mil waukee, include **J. A. Longley**, re gional representative for transmission and distribution equipment; **T. L. Meyers**, manager of the San Francisco district; and **G. K. Lewis**, manager of the Portland district.

Karl W. Mueller has been elected president of **Clinton Engines Corp.**, Maquoketa, Iowa.

Other newly elected officers include **Ira A. Lutz**, senior vice president, treasurer, and director; **Alex Hunter**, vice president for manufacturing; **Harry Graham**, vice president for en gineering; and **Cletus V. Eriacher, Jr.**, vice president and general sales man ager.

Two vice presidents have been elected by **American Hoist & Derrick Co.**, St. Paul. The men are **H. M. Fulton**, works manager, and **K. F. Pelton**, director of engineering.

AMMCO
PORTABLE DREDGES
Today's Most Modern...
Most Versatile... Portable Dredge!
★ ONE MAN PUSHBUTTON CONTROL!
★ ELEVATED CONTROL ROOM!
★ POWERFUL HYDRAULIC DRIVES ON CUTTERHEAD AND WINCHES
★ 80% LESS MOVING PARTS
★ 80% LESS MAINTENANCE
AVAILABLE FOR SALE or LEASE LONG OR SHORT TERM
AMERICAN MARINE AND MACHINERY COMPANY • P.O. BOX 1150 • NASHVILLE, TENN.
SALES TERRITORIES AVAILABLE

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For more facts, use Request Card at page 18 and circle No. 418

Generally accepted accounting principles for contractors

Part 4: Form and content of financial statements

This is the last of four installments on accounting principles generally accepted by the accounting profession for use by contractors. The material, which is being published in booklet form by the American Institute of Certified Public Accountants, 270 Madison Ave., New York 16, N. Y., represents the thinking of the institute's committee on accounting procedures.

The presentation of comparative financial statements in annual and other reports emphasizes that statements for a series of periods are more significant than for one period. This enhances the usefulness of such reports by bringing out more clearly the nature and trends of current changes affecting the contractor. It is, of course, necessary that prior-year amounts—which are shown for comparative purposes—be comparable with those for the most recent period. Any exceptions to comparability should be explained. Changes that have occurred in the manner of presenting corresponding items should also be disclosed and explained. When it is appropriate, prior-year amounts should be expressed in a manner that affords some means of comparison.

When the contractor's services change in nature or size, the comparability of the financial statements may not be important. In such circumstances, it is more important to disclose changes in the business by separately labeling items in the financial statements.

Cash basis vs. accrual basis

Although the cash basis for recording financial transactions is acceptable for some reportings, it is not acceptable for financial statements that purport to present financial position or results of operations when the cash-basis accounting practices produce results materially at variance with those followed in preparing accrual basis statements. Ordinarily, the accrual basis is the only generally accepted basis for contractors' financial statements. When, however, contractors' statements are prepared entirely or substantially on a cash basis, this fact should be disclosed in the statements or in footnotes. The statements or footnotes should also indicate clearly the general nature of any material items omitted (such as accounts receivable and payable) and the net effect of such omissions on the statements. Similar standards of disclosure should apply to such statements when prepared on a modified accrual basis.

Offsetting or netting amounts

It is a basic general principle of accounting that the offsetting of assets and liabilities in statements of financial position (or balance sheets) is improper except where a right of set-off exists. Thus the net debit balances for certain contracts should not ordinarily be offset against net credit balances relating to others, unless the offsetting balances relate to the same client of the contractor. A strict legalistic interpretation of the words, "the same client," is not intended here. Thus, where there is a close relationship, as in the case of contracts that are parts of the same project, the group may be treated as a unit in offsetting net debit and credit balances for statement presentation purposes.

The committee on accounting procedure of the American Institute of Certified Public Accountants recognized this basic accounting principle of offsetting in dealing with the two accepted methods of accounting for long-term construction-type contracts. In discussing the "percentage-

(*Continued on next page*)

TWO ELEMENT SPEED SENSITIVE SWITCHES

The Synchro-Start Models GH-2 and GS-2 governors contain two snap action switches to be used for opening or closing circuits at any RPM over 300

They contain sealed ball bearings, are adjustable while running and are encased in a splash proof housing. These two switch governors are supplied for the standard SAE tachometer drive or distributor take-off and for AND20005 engine pad mounting (GA Series).

Other Synchro-Start governors are available with one and three switches with a variation of mountings.

SYNCHRO-START PRODUCTS, INC.
8151 NORTH RIDGEWAY AVENUE, SKOKIE, ILLINOIS
Manufacturers of
AUTOMATIC ENGINE CONTROLS • SPECIAL CONTROL PANELS
SAFETY ALARM SETS • D.C. SOLENOIDS • HEAVY DUTY RELAYS

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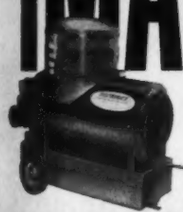

An All-Purpose Portable Heater Adjustable for Any Output—up to 400,000 BTU's

ELECTRO-JET

No more need for several "one-capacity" heaters! One simple nozzle adjustment gives the Electro-Jet the output for any requirement — up to 400,000 BTU's. Simple push-button control. Lights instantly — up to 500 degrees in 70 seconds. Thermostat maintains constant temperature. Fully automatic oil burner. 110 volt A.C. fan delivers 2,500 cu. ft. of air per minute. Lifetime replacement guarantee.

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700 E. Cherry, Vermillion, S. D.

DEALERS WANTED! Sell 4 to 6 units a week and make up to $500 a week. Exclusive territories.

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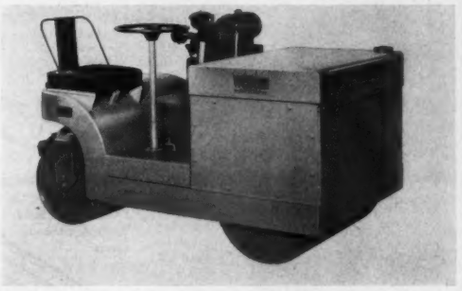

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WESTERN VIBRAROLL

- Compaction equal to an 8-ton static roller
- Ideal for granular base courses, asphalt surfaces
- Electric starting, cocoa mats, sprinklers
- Get specified density in fewer passes!

DEALERS
Visit A.E.D. Jan. 24-28th
CONDEX — Booth 21
See WESTERN'S complete roller line —
- Static steel wheel
- Vibratory tow-type
- Rubber tired, self-propelled

WESTERN
Equipment Division
Douglas Motors Corporation
1234 N. 62nd St. Milwaukee, Wisconsin

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THE BIG SHOT IN COMPACTION EFFICIENCY

MODEL GVR 100-C RAMMER
- 450 to 650 blows per minute.
- Lightweight — only 115 lbs.
- Compacts all types of material such as clay, earth or any granular material.

MODEL VPG 1500 VIBRO PLATE
- Develops 1700 lbs. — 5000 times per minute.
- Self propelled
- Lightweight — only 135 lbs. — 50% lighter than most vibratory compactors.

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CORPORATION
HARTFORD, WISCONSIN

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Please send me free descriptive literature and the name of your nearest dealer.
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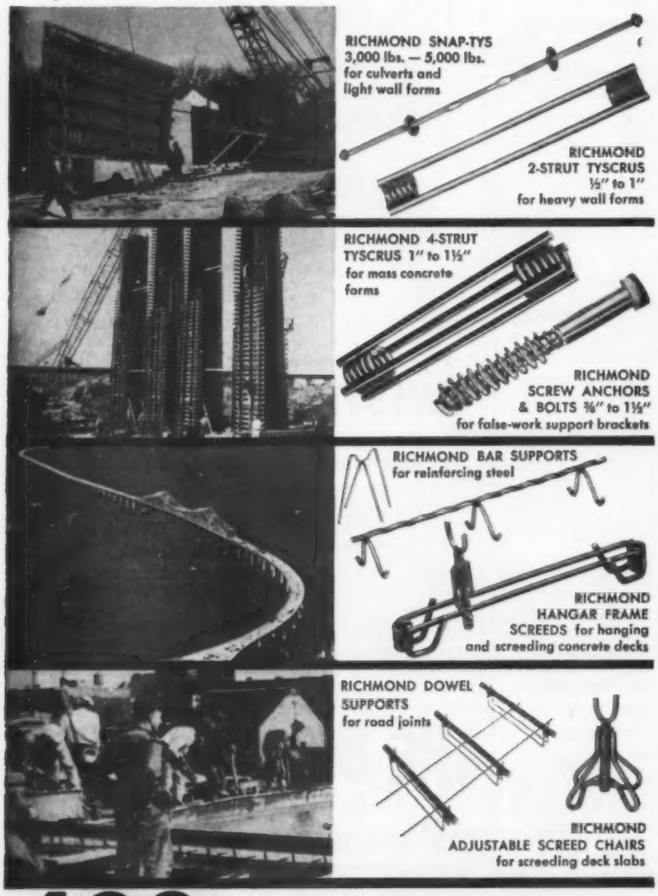
Construction Camera

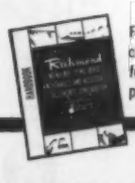
A leveling course of hot-mix, 2 inches thick, is put down on an 8¼-mile section of U. S. 40 west of Denver. Traffic used the road at all times while a Barber-Greene paver and Huber-Warco 5 to 8-ton tandem handled the work in 1-mile sections. Asphalt Paving Co., Wheat Ridge, Colo., held the job.

Nine bridges and 7 miles of highway will form the ½-mile-square cl... leaf outside of Lenoir City, Tenn. Oman Construction Co., Nashville, ... Lorain crane with 65-foot boom at a radius of 40 feet to set a 2,400-p... 16×20×5-foot form for bents at one of the crossovers.



400 Richmond products Speed road building

Shown here are a few of the items in the complete line of Richmond-engineered form-tying, anchorage and accessory devices for concrete construction. The Richmond Handbook describes all of them, gives wire and steel sizes used, safe loads and ultimate strength values. There is a Richmond product for every concreting need.



For your copy of the current Handbook—or for help on a specific problem—write to:

Richmond
SCREW ANCHOR CO., INC.
INSIST ON RICHMOND
... AND BE SURE IT'S RICHMOND

Main Office: 816-838 LIBERTY AVENUE, BROOKLYN 8, N. Y.
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(Continued from preceding page)

of-completion" method, the committee made this statement: ". . . current assets may include costs and recognized income not yet billed with respect to certain contracts; liabilities—in most cases current liabilities—may include billings in excess of costs and recognized income with respect to other contracts."

In commenting on the "completed-contract" method, the committee said that ". . . an excess of accumulated costs over related billings should be shown in the balance sheet as a current asset, and an excess of accumulated billings over related costs should be shown among the liabilities, in most cases as a current liability."

Reaffirmation of the theory of offset is to be found in this statement by the committee relative to the "completed-contract" method: "If the costs exceed billings on some contracts, and billings exceed costs on others, the contracts should ordinarily be segregated so that the figures

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THE COLUMN CLAMP THAT WORKS LIKE A SQUARE

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Forms all square and rectangular columns 9" thru 36". Automatically squares columns.

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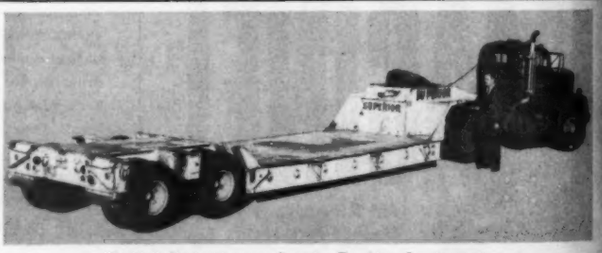

"Buddy" Clark, Manager Superior Trucking Co., inspecting his Birmingham Lowbed after 300,000 miles.

300,000 MILES—and still going!

MR. CLARK LIKES HIS BIRMINGHAM LOWBED

Superior Trucking Company, Inc., of Atlanta and Birmingham, is a leading heavy hauler in the South. Their experience has proved to them that Birmingham Trailers really are built for "rugged wear over the long haul."

"The Birmingham Lowbed shown in this photograph," writes Mr. Clark, "is still in excellent condition after 300,000 miles of satisfactory service."

(Write for Catalog)

BIRMINGHAM MANUFACTURING COMPANY, Inc.
14 S. 55th Street, Birmingham, Alabama, Phone WO 1-6183
PLATFORMS TOTEM-ALLS LOWBEDS

For more facts, use Request Card at page 18 and circle No. 425

Installation of drainage tile under Interstate 1, which runs from Conneaut to Cincinnati, Ohio, is done by a subcontractor following final grading. The Gar Wood-Buckeye 307 ditcher—one of two on the job—uses special buckets that form a contoured bottom to cradle the tile. Crews average 10,000 feet a day.

Clay, earth, peat, and gravel excavation is handled by an International TD-20 Drott 3-cubic-yard 4-in-1 bucket during relocation of a 3-mile stretch of U. S. 46 near Dover, N. J. The rig handles about 125 loads—or 700 cubic yards—in 4 hours. S. J. Groves & Sons Co., Woodbridge, N. J., is the contractor.

CM Hammerlok®
COUPLING LINK

Make your own HERC-ALLOY Chain Assemblies
with all components furnished from your distributor's stock.

NO PEENING NO WELDING

- Hammerlok is made of alloy steel...is stronger than Herc-Alloy chain...is thoroughly field tested.
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CM CHAIN

COLUMBUS McKINNON CHAIN CORPORATION
TONAWANDA, NEW YORK
NEW YORK • CHICAGO • CLEVELAND
LOS ANGELES • SAN FRANCISCO
Plants: San Francisco, Los Angeles, Portland, Salt Lake City and Dixon, Ill.
Canada: McKinnon Columbus Chain Limited, St. Catharines, Ontario

For more facts, circle No. 426

on the asset side include only those contracts on which costs exceed billings, and those on the liability side include only those on which billings exceed costs."

The theory of offset can be made equally applicable to the "percentage-of-completion" method.

Billings and related costs should be presented separately. This can be informative of the status of dollar volume of billings and costs (but not an indication of future profit or loss thereon). In addition, grantors of credit, such as banks and insurance companies, have expressed preference for separate disclosure. This may be accomplished through "short extension" of the amounts on the statement of financial position or disclosure in the notes to the financial statements. Thus, under the "percentage-of-completion" method, the current assets may disclose separately total costs and total recognized income not yet billed with respect to certain contracts. Current liabilities may disclose separately

(Continued on page 163)

FOR TRULY
UNDISTURBED SAMPLES
FROM DIFFICULT FORMATIONS

ACKER-DENISON CORE BARRELS

THE ACKER-DENISON CORE BARREL PERFORMS WHERE OTHERS FAIL

The ability of the Acker-Denison Core Barrel to obtain **undisturbed samples** from sand, hard clays, silt and other difficult cohesive soil conditions accounts for its worldwide acceptance by Soil Engineers.

ACKER-DENISON CORE BARREL —PROVED AND IMPROVED

While the basic features of the original Denison are duplicated in the samplers manufactured by Acker, numerous improvements suggested by Acker's 40 years of soil sampling experience are incorporated in the new Acker-Denison. It is these improvements that make the Acker-Denison even more useful and efficient than before!

Remember, no other manufacturer can offer the improved performance and exclusive patented features of Acker's new Denison Core Barrel. This proud achievement of Acker development and progress is exclusively Acker!

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ACKER DRILL CO., INC.
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TAMPO EXCLUSIVE!
NATURAL FREQUENCY VIBRATION
with VIBRA-METER

Brown & Blakeney, Fort Worth contractors use their Tampo vibratory roller on their state highway project near Arlington.

Only the Tampo vibratory roller can operate at the "resonant peak" or "natural frequency" of the particular material being rolled — by means of Tampo's exclusive VIBRA-METER. See the natural resonance frequency point on the VIBRA-METER dial and make roller adjustments accordingly for full compaction efficiency.

PATENT APPLIED FOR

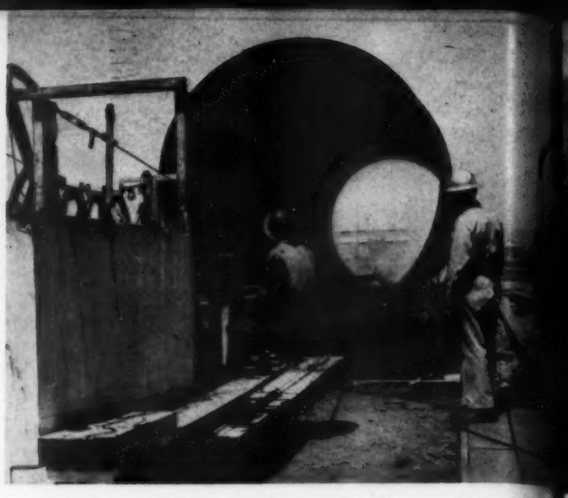
Use of the VIBRA-METER keeps roller adjusted to the natural frequency of any material, any condition. Only Tampo's vibratory roller can give efficient compaction – because it vibrates at the proper frequency for a particular material to do the most work by natural frequency vibration.

TAMPO MANUFACTURING COMPANY
BOX 4248, STATION A • SAN ANTONIO 7, TEXAS

For more facts, use Request Card at page 18 and circle No. 428

Construction Camera

Two hundred tons of rock per hour is going from this limestone quarry to a crushing plant, near Rapid City, S. Dak., that produces concrete aggregates for contractors. A Bucyrus-Erie 38-B shovel handles the loading operation. The Model 65 Payhauler and a companion unit make the one-mile round trip.



Lining, coating, and wrapping of the 13-foot-diameter 30-foot-long [illegible] sections for the Mammoth Pool power tunnel project northeast of Fr[illegible] Calif., are done mechanically. Some 57 sections of pipe are being [illegible] with coal-tar primer and enamel at the Kaiser Steel plant in Napa.

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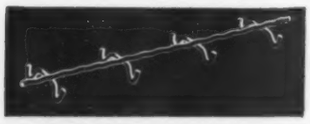

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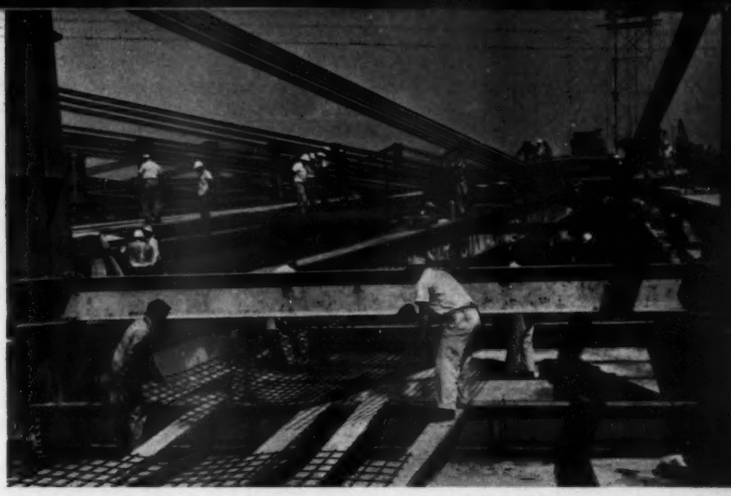

The big roof of the Pan American World Airways passenger terminal, covering a 4-acre area at New York's International Airport, is being built with lightweight concrete, reinforced with welded-wire fabric. The wire allows the builder to realize a 20 per cent reduction in the weight of reinforcing.

(*Continued from page 161*)

total billings and total costs and recognized income with respect to other contracts. The separate disclosure of revenue and costs in statements of income is, of course, generally accepted. Only through comparable presentation of such data in the statement of financial position can the reader adequately evaluate the contractor's comparative position.

An advance received on a "cost-plus" contract is usually not offset unless it is definitely regarded as a payment on account of work-in-progress, in which event it will be shown as a deduction from the related asset. Advance amounts offset should, of course, be disclosed. Such advances generally are made for the purpose of providing a revolving fund and are not usually applied as a partial payment until the contract is nearly or fully completed. However, when a terminated government contract is one on which advance payments had previously been received,

(*Continued on next page*)

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(Continued from preceding page)

the financial statements of the contractor issued before collection of the claim should ordinarily reflect any balance of those advances disclosed as deductions from the claim receivable.

The committee on accounting procedures recommends that provision be made for the loss on a contract when current estimates indicate expected losses. The total provision for such losses, which might be termed "estimated loss on uncompleted contracts," should be disclosed in the statement of financial position or notes thereto and not "netted" without disclosure. Such allowances should be shown in total as reductions of those contract costs includable in current assets or additions to those includable in current liabilities. An allowance for loss may, of course, change a contract that would otherwise be includable in current assets to one includable in current liabilities, since it represents costs for which the contractor will not be reimbursed.

Disclosure of accounting basis

It may be appropriate in some circumstances to select and use both accepted methods—"percentage-of-completion" and "completed-contract" methods of accounting for income. Specific disclosure of the method used should be made either in a footnote or in the terminology employed in the financial statements. An indication such as "accrual basis" is not sufficient disclosure, as both the "percentage-of-completion" and "completed-contract" methods use accrual-basis accounting. Disclosure of the use of the "completed-contract" method is self-explanatory. However, a statement that the "percentage-of-completion" method has been used without an indication of how this method is employed would not seem to be a sufficient disclosure; in practice this method is applied in a variety of ways, some of which tend to be less reliable than others. When the "percentage-of-completion" method is used, then the financial statements should include a note such as the one that follows.

"The company records profits or losses on its long-term contracts through estimates on the percentage-of-completion basis. The basis on which such profits or losses are recorded prior to completion is, when progress thereon reaches a point where experience is believed to be sufficient to establish estimates reasonably indicative of final results (such point is in no case less than 25 per cent of completion), to accrue as an estimated ultimate loss the full amount thereof, and as to an estimated profit, that portion which is deemed allocable on the basis of engineers' estimates of the percentage-of-completion, to expenditures incurred and work performed. Income from short-term contracts is recorded on substantial completion of each contract."

The most acceptable methods for recording income are likely to differ under the two basic types of contracts (namely, cost-plus, in its variety of forms, such as cost-plus percentage of cost, cost-plus fixed fee—these with or without "guaranteed maximum billings"—and fixed price or lump sum). Thereafter, it is usually desirable not only to segregate total amounts relating to each type of contract in the financial statements, but to indicate the methods adopted for recording income.

It is desirable to disclose a number of other matters in a contractor's financial statement. Among these are existence of renegotiation refunds, termination claims and claims of subcontractors; the nature of changes in a contractor's business; utilization of cash, rather than accrual, basis of accounting; amounts provided for contract losses; method of income realization, supplemental information on joint-venture operations; amounts of intercompany transactions; amounts of rental commitments; depreciation policies; etc.

Disclosure should also be made of such additional matters as unusual labor agreements; material purchase or sale commitments; hypothecated

(Continued on page 166)

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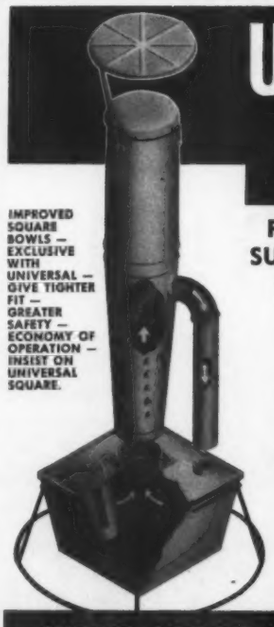

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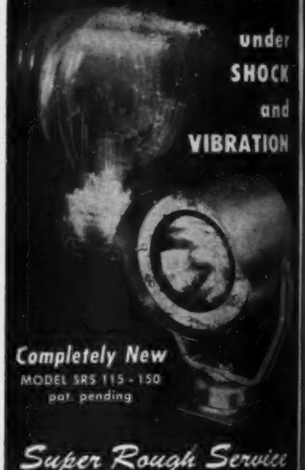

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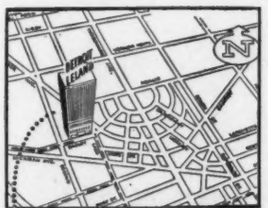

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(*Continued from page 164*)

assets; loan agreement restrictions; and penalty or guarantee provisions of construction contracts. In addition to making the required disclosures, it is most informative to supplement a contractor's regular financial statements with information of a statistical nature on movement of contracts. Such information can take the form of indicating the total amount of contracts in progress at the beginning of the year, new contracts entered into during the year, contracts completed during the year, and total amounts of contracts in progress at the end of the year. It is helpful to have this information in a comparative form. It is also desirable, in some instances, to disclose the constituent parts of such information; for example, the different classes of projects on which the contractor is engaged, or separate listings of domestic and foreign operations, etc. Supplementary information of this nature is very much desired by credit grantors.

Grantors of credit, including surety companies, and many state highway departments issue forms that often require further details of certain financial information. Observance of the accounting principles and the suggested form and content of a contractor's financial statements should result in a fair presentation of his position and results of operations. However, the contractor and his accountant should acquaint themselves with the requirements called for by the forms and be prepared to supply the necessary supporting details.

Joint ventures

As a means of spreading risks and pooling financial resources and skills for certain jobs, it is common for contractors to join forces through the use of a joint venture. The members may be sole proprietorships, partnerships, or corporations, but the joint venture itself is a separate business entity for which separate accounts are usually kept. Each member of the joint venture usually contributes capital and may have accounts receivable from the joint venture for equipment rentals, engineering, architectural or other services, sales of material, and other items. It is also common for the participants to bill the joint venture [illegible] interest on capital invested, accounting, and other overhead expenses incurred on behalf of the joint venture. The methods for reimbursing or compensating the participants are usually provided for in the joint venture agreement.

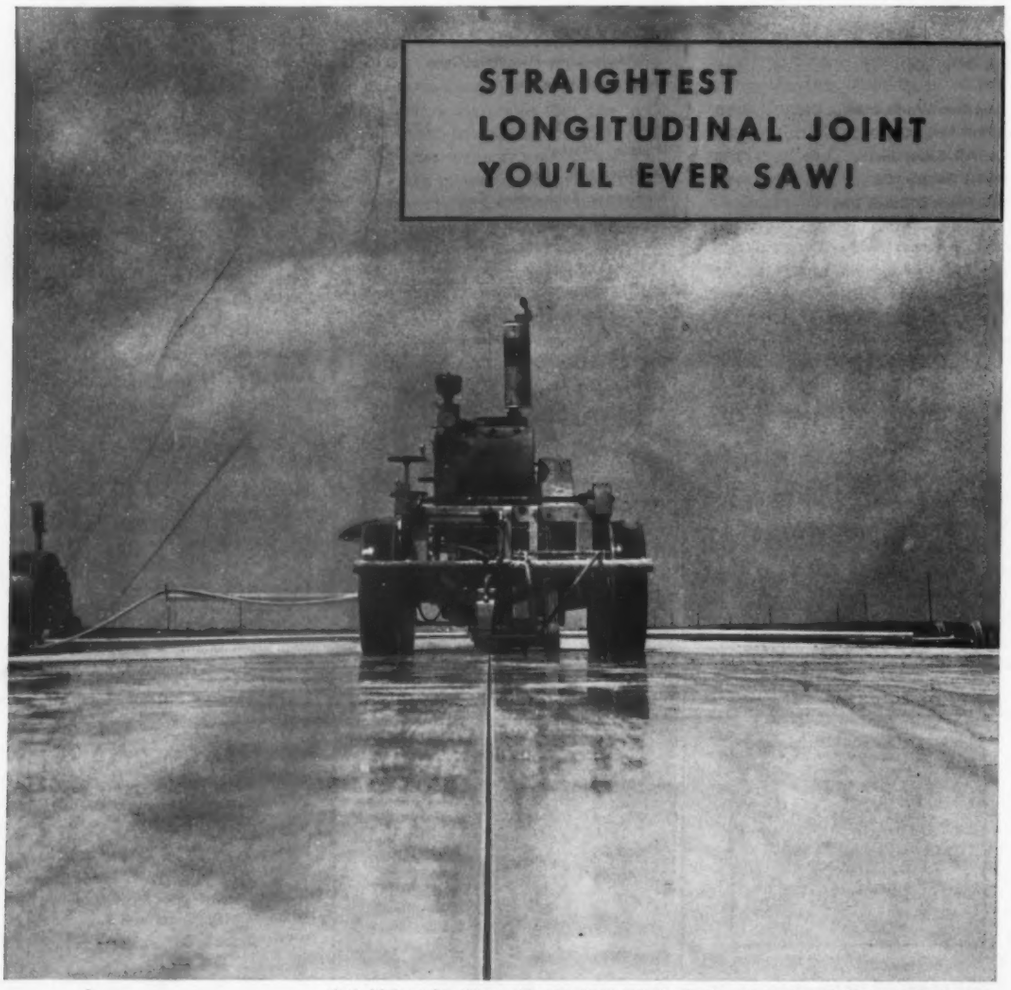
The investment of a contractor member in a joint venture as well as receivables from the joint venture should be separately disclosed in the financial statements if these items are material in amount. It is sometimes possible to separate the investment in a joint venture and receivables therefrom into current and noncurrent portions based upon the underlying assets of the joint venture. The contractor's share of joint venture earnings should be shown separately in his income statement. It is not common to record the proportionate share of billings and costs applicable to joint-venture operations in the financial statements of individual members.

The joint venture should make its own election as to the method of recording income on its construction contracts, and this method can differ from the methods used by members of the joint venture in their financial statements. The approach to the selection of a method for recording income of a joint venture should be the same as that for recording income under contracts. Each member of the joint venture may record his share in the income or losses of the joint venture for the fiscal year of the joint venture ending in the fiscal year of the member. However, members may elect to record income or losses of the joint venture as reports on joint-venture operations are received.

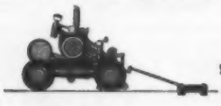
If the venture income or investment is substantial, it is preferable to include the separate financial statements of the venture with the financial statements of the contractor. The venture financial statements should, of course, disclose the method of recording income. If separate financial statements are not provided, it is generally advisable to set forth in a footnote to the contractor's financial statements a summary of the assets and liabilities of the joint venture if the investment in the joint venture is material.

The development of accounting principles over recent years has logically led to a demand for a larger degree of uniformity. A definition of the word "uniformity" suggests similar treatment of the same item occurring in many cases. In this sense the risk is run of concealing important differences among cases.

The accounting profession has been and is aware of divergencies in accounting. It also acknowledges that diversity of practice will continue as new practices are adopted before the old ones are discarded completely. But adoption of present concepts of accounting principles by contractors will limit existing areas of difference, contribute to a better understanding of such principles, and result in improved presentations of financial statements. THE END



U. S. Highway No. 10 near Tappan, North Dakota. Northern Improvement Company, Contractors.



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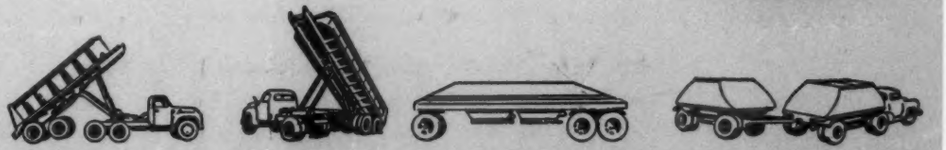

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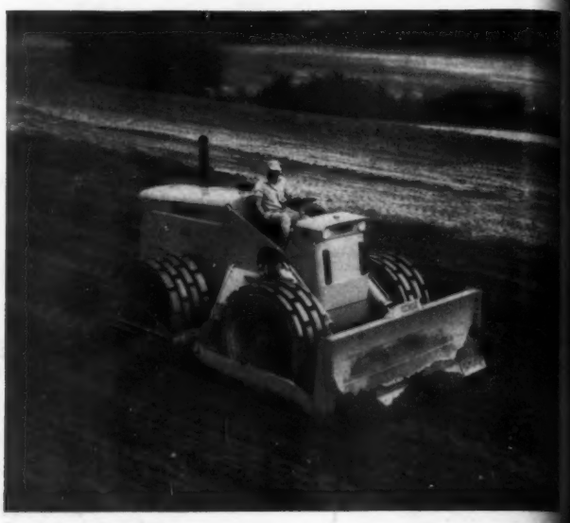
KANSAS

Wet, sticky hauler-dumped fill proves no problem for high-traction 375 hp Model 380 on Superhighway. Owner: Bennett Constr Co, Bethel.



OHIO

Tires replaced by steel wheels, this Model 180 dozes and compacts clay fill. Owner: V. N. Holderman & Sons, Columbus.

GEORGIA

Replacing crawler tandems with 600 hp Model 480 resulted in 14 more scraper loads per hour, 3.8 more yds per load, $123 per hour additional profit. Owner: Hugh Steele, Inc, College Park.

CALIFORNIA

Sand fill at Oakland Airport has no effect on Model 380's tires yet it wore out crawler tracks in 6 *weeks*. Owner: Utah Construction Co, San Francisco.

MINNESOTA

Fast 262 hp Model 280 handles *both* rock fill—360 loads, 5,000 yds per day—*and* shovel cleanup 3 mi away. Owner: Alley Constr Co, Faribault.

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